NONPOINT SOURCE POLLUTION REPORT AND PROPOSED WORK PROGRAM

August 24, 2001

San Francisco Bay Conservation and Development Commission

Nonpoint Source Pollution Report And Proposed Work Program

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Everyday activities often leave a variety of pollutants on the ground, from motor oil and grease on city streets, to gardening fertilizer, pesticides, and sediment from construction and new development. When it rains, the storm water carries these pollutants to storm drains, creeks, wetlands, groundwater basins, and, ultimately, to the San Francisco Bay. This polluted runoff (also called nonpoint source pollution, or NPS) can damage waterways and wetland habitats, harm or kill fish and wildlife, and make water bodies unsuitable for recreation. Polluted runoff is considered one of the top threats to the Bay's ecological health, and may account for a considerable proportion of the Bay's total pollutant load. Trace metals such as copper and mercury and other contaminants such as polychlorinated biphenyls (PCBs), DDT, and polyaromatic hydrocarbons (PAHs) are of particular concern in the San Francisco Bay, and nonpoint source pollution is considered to be a probable source for many of them (California 303(d) list; SFEP 1992; SFEI 2000). Regulatory agencies, non-governmental organizations, and other entities are concerned about pollutant impacts on San Francisco Bay, especially over potential pollutants from urban runoff, marinas and recreational boating, hydromodification activities, and wetlands and riparian areas.

The San Francisco Bay Conservation and Development Commission (Commission or BCDC) currently addresses polluted runoff through its permit conditions, enforcement efforts, plan review process, *San Francisco Bay Plan* policies, and planning efforts. The Commission's authority regarding polluted runoff is complex and depends upon the context of particular projects. Overall, however, the McAteer-Petris Act, Suisun Marsh Preservation Act, *Suisun Marsh Protection Plan*, and the *San Francisco Bay Plan* policies give the Commission broad authority to consider the water quality impacts and to require appropriate permit conditions for most Commission-approved projects.

Polluted runoff is also addressed by other agencies, primarily by the State Water Resources Control Board (State Board), the San Francisco Bay Regional Water Quality Control Board, and by local government programs and policies. Because of the Regional Board's primary authority, greater area of jurisdiction, greater resources, and expertise in water quality matters, the Commission, the State Board and the Regional Board signed a Memorandum of Understanding (MOU), last comprehensively updated in 1988, that established lead responsibility for water quality to the Regional Board. In that MOU, the Commission agreed to require in permits the use of best management practices for the control of nonpoint source pollution, and the Regional Board agreed to

provide BCDC with up-to-date information on proposed treatment or control alternatives for nonpoint source pollution, including recommended permit conditions. Currently, BCDC refers all major permit applications to the Regional Board for review and advice, thus establishing a built-in level of polluted runoff assessment and coordination with the Regional Board.[1] Administrative permits for small projects, such as small riprap projects, are not likely to have a large cumulative polluted runoff impact (although they may have cumulative habitat impacts),[2] and therefore, are not routinely submitted to the Regional Board for review. However, the Regional Board does receive a copy of all permit listings and is also copied on all permits that are issued.

The *San Francisco Bay Plan* is founded on the belief that water quality in San Francisco Bay can and will be maintained at levels sufficiently high to protect the beneficial uses of the Bay such as recreational boating, navigation, and wildlife, aquatic, and estuarine habitat. One of the Commission's on-going goals is to work collaboratively with others to achieve an effective, efficient Bay-wide planning and regulatory program. In order to better protect the Bay's resources, all agencies with jurisdiction or authority over water quality must collaboratively work together to prevent or reduce nonpoint source pollution. As a regional agency with authority and jurisdiction over Bay resources, the Commission can play an important role in maintaining and improving the quality of the Bay's waters and can best address nonpoint source pollution control through joint efforts with other agencies and organizations.

This report and proposed work program (Work Program) is intended to be consistent with the 2000 *Plan for California's Non-point Source Pollution Control Program* (California Plan) and the federal requirements of the Clean Water Act and Coastal Zone Management Act. As described below, the Work Program includes four primary components: (1) reviewing *San Francisco Bay Plan* findings and policies pertaining to nonpoint source pollution; (2) holding public nonpoint source workshops for interested agencies and organizations such as recreational boating groups, marina operators, stormwater programs, and environmental groups; (3) increasing coordination with federal, State and local agencies, stormwater programs, recreational boating organizations, environmental groups, and other interested parties; and (4) identifying procedures for implementing the California Plan (tracking, monitoring, training). This

[1] The Commission usually issues a major permit for work that is more extensive than a minor repair or improvement. A major permit is any Commission permit other than an administrative permit, emergency permit, a regionwide permit or an abbreviated regionwide permit (BCDC Regulation Section 10300). See Chapter 4 of this report for additional information. See also BCDC Regulations, Sections 10601 and 10300.
[2] Dale Hopkins, Regional Water Quality Control Board, personal communication, 11/00.

Work Program also proposes potential funding sources and time frames for implementing the program elements (see Table 1).

As evident below, the Commission's proposed Work Program includes strategies intended to reduce or prevent nonpoint source pollutants from four categories of potential sources: urban runoff, marinas and recreational boating, hydromodification, and wetlands and riparian areas. The Commission has no control over the vast majority of polluted runoff coming into San Francisco Bay because the watershed for the San Francisco Bay-Delta estuary drains approximately 40 percent of the State including a portion of the State of Oregon; yet the Commission's jurisdiction and authority generally extends only 100 feet landward from the mean high tide line of the Bay and five feet above mean sea level in the Bay's tidal marshes. Any focus in the Work Program on marinas and recreational boating is not necessarily because marinas and recreational boating have been identified to be significant pollutant sources in San Francisco Bay, or more significant in the Bay than other categories of nonpoint sources. Indeed, there appear to be very few Bay-wide studies addressing pollutants generated by or evident at marinas. Rather, the Commission's focus on marinas and boating is because these are areas over which the Commission has jurisdiction and authority. Further, many of the management measures (best management practices) identified in the California Plan related to marinas and recreational boating do not appear to be adequately addressed by other state agencies and local programs. Therefore, it is entirely appropriate for the Commission to coordinate with other agencies and organizations to explore whether and to what extent marina-related nonpoint source pollution exists and is a problem in the Bay, to identify whether additional Commission efforts are warranted to resolve the problems, and to determine what those efforts should be.

PROPOSED WORK PROGRAM

Task 1: Review *San Francisco Bay Plan* Findings and Policies

1.1. **Review *San Francisco Bay Plan* Water Quality Findings and Policies Pertaining to Nonpoint Source Pollution and Prepare Planning Policy Report.** The *San Francisco Bay Plan* (Bay Plan) findings and policies that address polluted runoff, stress the importance of water quality, make provisions for best management practices (BMPs), and establish broad goals to protect water quality. However, as part of the comprehensive Bay Plan update, the findings and policies will be reviewed and analyzed in coordination with all interested parties to determine whether and to what extent nonpoint source pollution is a water quality problem in the Bay and whether policy revisions may be appropriate to: (1) incorporate the latest scientific understandings about polluted runoff in the Bay, such as the cause and effect of polluted runoff on the Bay and its natural and economic resources; (2) provide information on status and trends of the priority pollutants of concern in San Francisco Bay; and (3) provide greater education about polluted runoff and how to avoid or minimize its effects. Based on this review and analysis, a planning policy background report will be prepared and, if appropriate, may include recommended revisions to the Bay Plan's water quality findings and policies concerning nonpoint source pollution.

As part of the review of the water quality findings and policies, the Commission should consider analyzing the following:

1.1a. **Review BCDC's Special Permit Conditions and Update as Appropriate.** For all management measures[3] over which BCDC has authority and jurisdiction, the Commission, in conjunction with the Regional Board, should determine whether BCDC's current special permit conditions reflect present scientific understandings of polluted runoff and state-of-the-art best management practices. The Commission should also: (1) determine whether additional permit conditions should be considered and, if so, what those conditions should be; (2) determine whether changes should be made to special permit

[3] As used in the 2000 *Plan for California's Non-point Source Pollution Control Program*, "Management measures" are defined in section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA) as economically achievable measures to control the addition of pollutants to our coastal waters, which reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives. See Chapter 8 for a discussion of specific management measures.

conditions; and (3) develop a process for more frequent consideration of updates and changes to permit conditions. Discussions with the Regional Board staff are already underway for this item.

1.1b **Conduct Analysis of Commission's Polluted Runoff Concerns Beyond Scope of California Plan.** The California Plan management measures may not address the full range of the Commission's or other interested parties' polluted runoff needs and concerns. For example, invasive species is a pollutant of great concern to the Bay's biodiversity. However, the California Plan does not address this concern, nor does BCDC's five-year Work Program, because it responds to the California Plan. Dredging and disposal of dredged materials, also not addressed in the California Plan or BCDC's Work Program, may also have significant impacts on water quality. Water quality impacts, along with all aspects of dredging and disposal of dredged materials, are currently being addressed by BCDC's Long Term Management Strategy Program (LTMS). Under the Commission's Five-Year Program, this is a placeholder for BCDC to consider any additional issues that could affect NPS and water quality. Resources permitting, BCDC should conduct an additional analysis of the Commission's polluted runoff concerns consistent within its jurisdiction and authority beyond those addressed by the California Plan (for example, in coordination with State Lands Commission, Regional Board, and other appropriate agencies and entities, determine appropriate roles for BCDC regarding potential impacts of invasive species on water quality; update any new dredging permit conditions or changes to existing conditions that might come out of the LTMS).

1.2. **Review *San Francisco Bay Plan* Recreation Findings and Policies Pertaining to Marinas and Nonpoint Source Pollution**. The marina findings and policies in the Recreation section will be reviewed in coordination with recreational boating organizations, marina operators, federal, state, and local agencies and other interested parties and analyzed to determine whether any revisions may be appropriate, and, if so, what they should be, so that they incorporate the latest information and scientific understanding of the kinds of polluted runoff sources in marinas, their effect on water quality and the best means to avoid and/or minimize polluted runoff in marinas. For example, the existing Recreation findings do not discuss the special relationship between marinas and polluted runoff (e.g., unlike upland development, a marina's polluted runoff will not be filtered through land or through

riparian vegetation, and may reach the Bay in a more concentrated form), nor do they address the types of pollutants marinas are likely to generate or strategies for pollution prevention.

As part of the review, the Commission should consider analyzing the following:

1.2a. **Determine Whether Existing Methods For Addressing Marina Pollution Problems Adequately Address Marina Management Measures.** Many marinas in San Francisco Bay are not regulated under State Board stormwater permits and may continue to discharge or generate nonpoint source pollutants. Even when a permit does exist, many aspects of a marina do not come before the Regional Board for consideration. Marinas also do not appear to be addressed by local stormwater programs. The Commission has jurisdiction over most new and expanding marinas and support facilities around the Bay and can condition permits for many marina-related projects to address nonpoint source pollution impacts. The Commission also has specific Bay Plan policies encouraging new marinas at suitable sites on the Bay, allowing for some fill for support facilities, and ensuring that if water quality is not adequately protected or improved, that no new marinas or expansions should be allowed. Therefore, for all marina water pollution control management measures over which BCDC has authority and jurisdiction, the Commission, in conjunction with the Regional Board, should determine whether existing methods for addressing marina water pollution problems, including the Commission's and Regional Board's permit and enforcement processes, and the State Board's general stormwater permit process, adequately address marina management measures, or whether additional methods should be considered. In addition, the Commission and Regional Board should assess whether innovative incentives (such as funding for marina capital improvements) or other non-regulatory techniques might complement or substitute for new permit conditions. Examples could include increased emphasis on and participation in boater education programs such as Boating Clean and Green Campaign, and increased coordination and partnerships with other agencies and nonpoint source pollution programs.

1.2b. **In Partnership With Other Agencies, Determine Whether Fish Waste is a Problem, and if so, Determine Methods to Address it.** The most pronounced marina management measure gap concerns fish wastes (Management Measure 4.2B). Although there appears to be local concern over fish wastes discharged from waterfront

fish processing industries entering the Bay, it is not clear what the extent of the problem is at marinas in San Francisco Bay. The Commission, in partnership with agencies and interested parties such as the Coastal Commission, Regional Board, the Department of Fish and Game, the Department of Boating and Waterways (Boating and Waterways), and recreational boating organizations should jointly assess whether fish waste issues are a problem in San Francisco Bay and if so, whether they could reasonably be incorporated into educational materials distributed by the joint BCDC and Coastal Commission Boating Clean and Green Campaign or the San Francisco Estuary Project, whether new guidelines or policies should be adopted by the commissions and agencies, and whether additional permit conditions should be considered to address prevention of fish waste pollution.

1.2c. **Review BCDC Enforcement Program's Strategies For Sewage Facilities and Live-Aboards and Determine if Improvements Are Warranted.** The Commission often imposes and enforces permit requirements for sewage facilities, such as waste discharge prohibitions, live-aboard requirements, or requirements for waste facilities at new and expanding marinas. The Commission's enforcement program should consider reviewing its current strategies for enforcing permit conditions in Commission-issued permits related to sewage and other waste facilities and live-aboards and determine whether any improvements are warranted; it should also determine whether it may have water quality data that would help the Regional Board in its regional enforcement assessment.

1.2d. **Undertake Marina Design Study in Partnership With Department of Boating and Waterways to Develop Guidelines for New and Expanding Marinas.** Guidelines for siting marina facilities to best minimize pollutants and pollutant concentrations at new and expanding marinas can be a useful tool to help marina owners minimize polluted runoff impacts. Guidelines such as these could address marina flushing (Measure 4.1B), habitat assessment (Measure 4.1C), stormwater runoff control (Measure 4.1E), fuel station design (Measure 4.1F), waste management facilities (4.1H), solid waste control (4.2A), and liquid material control (4.2C). Many of these management measures (e.g., Measures 4.1B, 4.1C, 4.1E and 4.1F) are not currently addressed by the Regional Board, are not addressed by the State Board and Coastal Commission's five-year polluted runoff plan, and do not appear to be addressed by local programs, except through education and outreach to marinas and boaters. With

appropriate funding, the Commission should undertake such a study in partnership with other agencies such as the Department of Boating and Waterways and the Regional Board. Additionally, in coordination with Boating and Waterways, the Commission and/or the Boating Clean and Green Campaign could encourage well designed marinas to avoid or minimize pollution by developing a prize for a "Clean and Green Marina" retrofit design.

1.3. **Review San Francisco Bay Plan Shoreline Protection Findings and Policies to Determine Whether They Expressly Address Nonpoint Source Pollution.** The Commission will consider reviewing the shoreline protection findings and policies in the San Francisco Bay Plan and will determine whether they should be revised to expressly address polluted runoff and if so, how they should be revised. As part of the Commission's review of shoreline protection findings and policies, the Commission should consider analyzing the following:

1.3a. **Assess Whether Additional Environmentally Sensitive Shoreline Stabilization Methods Exist and, if so, Determine Whether These Methods Should be Promoted**. This action would help BCDC further address the marina shoreline stabilization measure (4.1D), which the State Board and Coastal Commission's five-year plan does not address, as well as the hydromodification[4] measure 5.3A (eroding streambanks and shorelines).

1.3b. **Review Existing Studies on Polluted Runoff Abatement Functions of Vegetated Treatment Systems to Assess Whether BCDC Should Promote their use**. For wetlands and riparian areas management measures, there appears to be a gap in promoting the use of engineered vegetated treatment systems.[5] Although BCDC's shoreline protection policies in the San Francisco Bay Plan promote nonstructural methods, such as marsh vegetation where feasible in shoreline protective projects, these policies do not expressly promote vegetated treatment systems to serve a polluted runoff-abatement function. BCDC should consider reviewing existing studies on the polluted runoff abatement functions of vegetated treatment systems and filter strips, and if warranted, pro-

[4] As defined in the 2000 *Plan for California's Non-point Source Pollution Control Program,* Hydromodification includes the modification of stream and river channels, dams and water impoundments and streambank/shoreline erosion.

[5] In the 2000 *Plan for California's Non-point Source Pollution Control Program*, the installation of vegetated treatment systems (e.g., artificial or constructed wetlands) are promoted in areas where these systems will serve a polluted runoff-abatement function. Vegetated filter strips and engineered wetlands remove sediment and other pollutants from runoff and wastewater, and prevent pollutants from entering adjacent waterbodies.

mote their use through the design review process, through increased education efforts, and through permit conditions, where appropriate. The other wetlands and riparian management measures appear to be well addressed by the Commission's permit conditions and planning efforts, as well as local programs and policies.

Task 2: Hold public nonpoint source workshops

2.1. **The Commission will hold public nonpoint source workshop(s) for interested parties such as federal, state, and local agencies, recreational boating organizations, marina operators, stormwater programs, and environmental groups.** The public workshops are intended to be a collaborative forum to bring interested parties together to discuss issues related to nonpoint source pollution in the Bay, to help participants jointly identify issues of concern and strategies to best address those issues, and to better educate participants on the status and trends of the sources, pathways, impacts, and reduction and prevention strategies for nonpoint source pollutants in the Bay.

Task 3: Increase Coordination with Federal, State, and Local Agencies and Stormwater Programs to Further Pollution Prevention Efforts

3.1. **Revise Memorandum of Understanding (MOU) with Regional Board and State Board.** The MOU with the Regional Board and State Board provides an adequate structure for interagency cooperation on polluted runoff issues. However, the MOU is over 10 years old and should be revised to update the vessel wastes, nonpoint source procedures, and marina conditions. A bi-annual water quality meeting between the BCDC and Regional Board staffs would help institute a continuing working relationship between the two agencies to help improve their polluted runoff prevention programs and keep the MOU up-to-date.

3.2. **Coordinate with the Regional Board on Marina Management Measures.** In order to prevent duplication of efforts and to encourage efficiency in their water pollution control activities, the Commission and the Regional Board should coordinate on the implementation of marina management measures. For example, Measure 4.1A describes the need for water quality assessments. The Regional Board does not currently require new and expanding marinas to assess water quality although it does have the authority to do so.[6] BCDC sometimes requires water quality

[6] The Regional Board has the authority to require water quality assessments under California Code, Section 13267. Dale Hopkins, Regional Water Quality Control Board, personal communication, 11/00.

monitoring in its permit conditions, and the State Board stipulates in its *First Addendum to the Five-Year Implementation Plan for 1998-2003* that the Regional Board will assess the condition of water quality at 50 percent of the marinas in the Bay in the future. To facilitate data comparison, BCDC and the Regional Board should coordinate on this measure, determine priorities for assessment, and establish acceptable joint protocols for assessments. As another example, the State Board further stipulates that to address Measures 4.2F and 4.1G (installation and maintenance of sewage facilities at marinas), the Regional Board will establish standards for a minimum number of sewage facilities and assess existing enforcement efforts for sewage pump-out facility maintenance at marinas. BCDC should incorporate the Regional Board's standards into its special permit conditions once those standards have been promulgated.

3.3. **Assess Additional Local Programs and Foster Relationships With Local Governments to Help Further Pollution Prevention Efforts.** The Commission staff only reviewed four representative local runoff management programs and policies as part of this report. The staff will consider reviewing additional local programs to further assess whether management measures for polluted runoff are being addressed at the local level (for example, Caltrans and Valley Transit Authority, not reviewed in this report, may likely be addressing many of the urban management measures for roads, highways and bridges through their stormwater quality programs). Additionally, the Commission will consider fostering relationships with local governments and will determine the types of guidance and information on polluted runoff that would help further both programs' pollution prevention efforts. BCDC will undertake these studies in coordination with the Regional Board and State Board.

Task 4: Procedures to Implement the California Plan (Tracking, Monitoring, Training)

4.1. **Track and Monitor Implementation of Management Measures Through Existing Enforcement Program.** To track implementation of management measures, the Commission will consider utilizing the existing enforcement program's compliance assistance, permit monitoring, and cease and desist and civil penalty order monitoring programs, which are currently monitoring all special conditions of Commission-issued major permits and orders, including water quality, to ensure projects are carried out consistent with the terms of a permit or order. The Commission will determine whether the enforcement program could also monitor minor permits to track smaller projects with the potential for significant water quality impacts. The

Commission will also consider developing a process for the enforcement staff to begin to coordinate and collaborate with the Regional Board's enforcement staff on enforcement cases involving polluted runoff.

4.2. **Train BCDC Staff and When Requested, in Coordination With the Regional Board, Train Local Government on Management Measures and Permit Conditions.** If the Commission develops new permit conditions and / or other nonpoint source pollution control guidelines, the Commission will train its regulatory (permit and enforcement) and planning staff on the use of the new permit conditions, management measures and guidelines. The Commission will also consider conducting joint training of local governments with the Regional Board and other agencies on polluted runoff control management measures.

Table 1. Potential Actions, Agencies, Funding Sources And Time Frames For Implementing Work Program Elements

Management Measure Categories: Urban (U), Marinas and Recreational Boating (M), Hydromodification (H), Wetlands and Riparian Areas (W)

Process Element	Actions/ Statements PA = Priority Action FA = Future Action	Management Measure Category	Lead Agency	Partner Agencies	Geographic Areas	Potential Funding	Performance Measures	Years 98 99	99 00	00 01	01 02	02 03	03 04	04 05	05 06	Notes
Coordinate	Review and possibly update BCDC's special permit conditions (PA)	U, M, H, W	BCDC	Regional Board	San Francisco Bay	FY 2001 Nonpoint Implementation Fund	Possibly updated permit conditions, process to consider updates and changes to permit conditions				x	x				As per MOU
Assess	Determine whether existing methods for addressing marina pollution problems adequately address marina management measures (PA)	M	BCDC	Regional Board	San Francisco Bay	General Funds	Possible program changes				x	x				
Coordinate	Coordinate with the Regional Board on implementation of marina management measures (PA)	M	BCDC	Regional Board	San Francisco Bay	FY 2001 Nonpoint Implementation Fund	Priority list, protocols				x	x				
Plan	Review *San Francisco Bay Plan* Water Quality findings and policies pertaining to polluted runoff and prepare planning policy report (PA)	U, M, H, W	BCDC	Regional Board, Coastal Commission	San Francisco Bay	FY 2001 Nonpoint Implementation Fund	Policy report, possible Bay Plan Amendment, possible revised policies				x	x				
Plan	Review *San Francisco Bay Plan* Recreation findings and policies pertaining to marinas and polluted runoff (PA)	M	BCDC	Regional Board, Coastal Commission	San Francisco Bay	FY 2001 Nonpoint Implementation Fund	Policy report, possible Bay Plan Amendment, possible revised policies				x	x				
Plan	Hold public nonpoint source workshops for interested parties in San Francisco Bay	U, M, H, W	BCDC	Regional Board, Department of Boating and Waterways	San Francisco Bay	FY 2001 Nonpoint Implementation Fund; General Funds	Public workshops				x	x	x	x		
Coordinate	Revise BCDC's MOU with the Regional Board and State Board (PA)	U, M, H, W	BCDC	Regional Board, State Board	San Francisco Bay	FY 2001 Nonpoint Implementation Fund	Revised MOU				x	x				
Assess	In partnership with other agencies, determine whether fish waste is a problem, and if so, determine methods to address it (FA)	M	BCDC	Coastal Commission, Department of Boating and Waterways, Department of Fish and Game	San Francisco Bay	California Integrated Waste Management Board CWA §319; General Funds	New educational materials, possible new guidelines or policies, new permit conditions					x				Dependent upon Coastal Commission agreement
Target	Review the BCDC enforcement program's current strategies for sewage facilities and live-aboards and determine if improvements are warranted (FA)	M	BCDC	Regional Board	San Francisco Bay	General Funds	Possible revised enforcement strategy					x				
Plan	Undertake a marina design study and develop guidelines for new and expanding marinas to minimize polluted runoff impacts (FA)	M	BCDC	Department of Boating and Waterways, Regional Board, Coastal Commission	San Francisco Bay	General Funds	Design and polluted runoff control guidelines							x		
Assess	Review existing studies on polluted runoff abatement functions of vegetated treatment systems to assess whether BCDC should promote their use (FA)	W	BCDC		San Francisco Bay	General Funds	Staff report							x		
Assess	Conduct an analysis of the Commission's polluted runoff concerns beyond the scope of the California Plan (FA)		BCDC		San Francisco Bay	General Funds	Staff report					x				

Process Element	Actions/ Statements	Management Measure Category	Lead Agency	Partner Agencies	Geographic Areas	Potential Funding	Performance Measures	Years 98 99	99 00	00 01	01 02	02 03	03 04	04 05	05 06	Notes
Track and Monitor	Track and monitor the implementation of management measures through the existing enforcement program (FA)	U, M, H, W	BCDC	Regional Board	San Francisco Bay	General Funds	Permits monitored, compliance assistance provided					x	x	x	x	
Coordinate	Develop a process for BCDC's enforcement staff to coordinate and collaborate with Regional Board's enforcement staff on enforcement cases involving polluted runoff (FA)	U, M, H, W	BCDC	Regional Board	San Francisco Bay	FY 2001 Nonpoint Implementation Fund	New enforcement process					x	x			
Plan	Train BCDC regulatory and planning staff on any new and revised NPS permit conditions, policies, management measures and guidelines (FA)	U, M, H, W	BCDC		San Francisco Bay	General Funds	BCDC staff workshop, updated electronic permit paragraph files					x	x	x	x	
Plan	Consider conducting joint training of local governments on polluted runoff control management measures (FA)	U, M, H, W	BCDC	Regional Board	San Francisco Bay	General Funds	Workshop for local governments					x	x			
Assess	Assess additional local programs, foster relationships with local governments and determine types of guidance and information on polluted runoff that would help further both programs' pollution prevention efforts (FA)	U, M, H, W	BCDC	Local governments, county-wide stormwater programs, Coastal Commission	San Francisco Bay	General Funds	NPS materials						x			
Plan	Review *San Francisco Bay Plan* Shoreline Protection findings and policies and determine whether they should be revised to expressly address nonpoint source pollution (FA)	M, H	BCDC	Regional Board, Coastal Commission	San Francisco Bay	General Funds	Policy report, possible revised policies						x	x		
Report	Report biennially to the Coastal Commission and State Board on the progress made on all actions	U, M, H, W	BCDC		San Francisco Bay	General Funds	Biennial NPS Report						x		x	

INTRODUCTION

Everyday activities often leave a variety of pollutants on the ground, from motor oil and grease on city streets to gardening fertilizer, pesticides, and sediment from construction and new development. When it rains, the storm water carries these pollutants to storm drains, creeks, wetlands, groundwater basins, and ultimately to the San Francisco Bay. This polluted runoff (sometimes called nonpoint source pollution, or NPS) can poison our waterways, damage wetland habitat, harm or kill fish and wildlife, and make water bodies unsuitable for recreation. Polluted runoff is considered one of the top threats to the Bay's ecological health, and may account for a considerable proportion of the Bay's total pollutant load. Trace metals such as copper and mercury and other contaminants such as polychlorinated biphenyls (PCBs), DDT, and polyaromatic hydrocarbons (PAHs) are of particular concern in the San Francisco Bay, and nonpoint source pollution is considered to be a probable source for many of them (California 303(d) list; SFEP 1992; SFEI 2000). There is also evidence that regulatory agencies, non-governmental organizations, and other entities are concerned about pollutant impacts on San Francisco Bay, especially over potential pollutants from urban runoff, marinas and recreational boating, hydromodification activities, and wetlands and riparian areas.

The purpose of BCDC's report and Work Program is to help the Commission review and analyze the Commission's existing pollution control authority and efforts, to identify areas where more Commission efforts may be appropriate, and to identify additional strategies to reduce and prevent pollutants from potential sources. Increased water quality protection will ultimately help to protect the many beneficial uses of the San Francisco Bay such as recreational boating, navigation, and wildlife, aquatic, and estuarine habitat. This report and Work Program describes the Commission's current polluted runoff control strategies and identifies actions that the Commission could take to improve them.

Why Does BCDC Need a Five-Year Nonpoint Source Report and Work Program? The California Resources Agency has directed each department, board, and commission under its purview to create a five-year plan to implement the 2000 *Plan for California's Non-point Source Pollution Control Program* (California Plan). The directive gives the Commission an opportunity to assess and evaluate its polluted runoff strategies and consider improvements to its strategies in order to be consistent with the California Plan and with the federal requirements of the Coastal Zone Management Act.

What is the California Nonpoint Source Pollution Control Program Plan? The California Plan, developed and administered through the State Water Resources Control Board (State Board) and the California Coastal Commission (Coastal Commission), is intended to protect the State's water quality by expanding its polluted runoff control efforts over the next 15 years. The California Plan specifies 61 management measures for agriculture, forestry, urban areas, marinas and boating, hydromodification, and wetlands to prevent and control polluted runoff. Management measures are essentially best management practices, or BMPs. For example, the California Plan's Marina Management Measure 4.1 states that marina fuel stations should be designed to prevent spills and facilitate cleanups.

As in the1988 California Plan, the 2000 California Plan uses a three-tiered approach of voluntary implementation, regulatory based encouragement of management practices and, if those are unsuccessful, effluent limits and enforcement actions, as well as the use of total maximum daily loads (TMDLs)[7]. The California Plan is intended to meet a variety of requirements and laws, including the federal Clean Water Act (CWA) and the Coastal Zone Act Reauthorization Amendments (CZARA). Section 319 of the 1987 amendments to the CWA required states to develop assessment reports that described the state's nonpoint source problems and to establish a nonpoint source management program to control or prevent the problems. In 1990, the federal CZARA were enacted. Section 6217 of CZARA requires coastal zone management agencies such as BCDC, in consultation with state water quality agencies, to develop and implement management measures to restore and protect coastal waters from the adverse impacts of polluted runoff.

BCDC's Role in the California Plan. The Resources Agency has directed BCDC, and all other agencies under its purview, to: (1) designate a lead staff person to coordinate with the State Board and the Coastal Commission on polluted runoff issues; (2) develop a five-year plan that identifies implementation actions for which the Commission has authority; (3) ensure that the Commission tracks monitors, assesses, and reports its actions to implement the plan; (4) and consider the need to establish or revise existing formal agreements with the State Board or the Coastal Commission to implement the plan.

[7] As required by Section 303 of the federal Clean Water Act, states must list surface waters not attaining water quality standards despite implementation of best practicable control technology, and states must perform a TMDL for all waters on the 303(d) list, which essentially involves establishing the maximum allowable amount of pollution and allocating the load among existing and potential sources. See Chapter One for more detail on TMDLs in San Francisco Bay.

The California Plan recognizes that each board, commission, or department may have limited jurisdiction to implement the suggested management measures. The California Plan lists BCDC as an implementing agency for the following categories of NPS sources: (1) urban; (2) marinas and recreational boating; (3) hydromodification; and (4) wetlands and riparian areas. Moreover, BCDC is specifically listed as an implementing agency for a number of management measures (explored in greater detail in Chapter 8).

BCDC's Approach. In support of these four directives, the BCDC staff has prepared a report and proposed Work Program to address polluted runoff. The BCDC report and Work Program recognizes the Commission's limited resources for this task and its limited jurisdiction in this matter. The BCDC report consists of eight chapters. Chapter 1 provides an overview of polluted runoff and its impacts on San Francisco Bay, with particular emphasis on the following four categories of potential NPS sources, specified in the California Plan: (1) urban, (2) marinas and recreational boating, (3) hydromodification, and (4) wetlands and riparian areas. Chapter 2 describes and analyzes the Commission's polluted runoff authority as specified in its laws and planning documents, the McAteer-Petris Act, the *San Francisco Bay Plan,* the Suisun Marsh Preservation Act and *Suisun Marsh Protection Plan*. Chapter 3 describes and analyzes polluted runoff policies in the *San Francisco Bay Plan*. Chapter 4 includes a description and analysis of the Commission's current polluted runoff control permit conditions. Chapter 5 describes and analyzes a select sample of representative local and regional polluted runoff control programs, plans and policies. Chapter 6 describes the Commission's polluted runoff-related planning efforts; and Chapter 7 reviews the Commission's Memorandum of Agreement (MOU) with the State Board and Regional Board, which establishes the Regional Board as the lead agency with regard to water quality issues, including polluted runoff. Chapter 8 of the BCDC report describes each applicable management measure and applies the above-mentioned strategies to each measure, including the Commission's authority related to that measure, relevant Bay Plan policies, relevant permit conditions, local programs, and an assessment of the Regional Board and the State Board efforts. Based on this analysis, Chapter 8 then identifies gaps and highlights those management measures that are not currently addressed or where more Commission efforts may be warranted and provides possible actions for implementation, where appropriate. The report's conclusions and the Commission's

proposed Work Program precede this introduction. This report provides a succinct review of the Commission's current polluted runoff authority and strategy, identifies areas where more Commission efforts may be appropriate and includes a proposed Work Program to address them.

CHAPTER 1

OVERVIEW OF POLLUTED RUNOFF AND ITS IMPACTS ON SAN FRANCISCO BAY

This chapter provides an overview of polluted runoff and its impacts on San Francisco Bay ecosystems and human health. The chapter first introduces the general definition, types and sources of nonpoint source pollution. Next, the chapter describes the current status and trends of nonpoint source pollutants in the San Francisco Bay estuary. Finally, the chapter addresses the following four categories of potential nonpoint source pollutants: (1) urban, (2) marinas and recreational boating, (3) hydromodification, and (4) wetlands and riparian areas, and provides evidence that regulatory agencies, non-governmental organizations, and other entities are concerned about each pollutant category's impacts on San Francisco Bay. BCDC is listed in the California Plan as an implementing agency for a number of management measures in each of these four categories (explored in greater detail in Chapter 8).

Definition, Pollutant Types, and Sources. The federal Clean Water Act divides pollution into two types, point sources and nonpoint sources. According to the U.S. Environmental Protection Agency (U.S. EPA), a "nonpoint source" is any source that does not meet the following definition of a "point source" specified in the federal Clean Water Act: "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural storm water discharges and return flows from irrigated agriculture" (CWA Section 502(14); 33 U.S.C. §1362(14)). Unlike pollution from distinct identifiable point sources, nonpoint source pollution comes from many diffuse sources. As runoff from rainfall, snowmelt or irrigation water moves over the ground, it picks up and carries away natural and human-made pollutants and deposits them into lakes, rivers, wetlands, groundwater, and inland and coastal waters. NPS pollution, also known as polluted runoff, is the leading cause of water quality impairments in California and the nation. According to the State Board, NPS, including natural sources, are the major contributors of pollution to impacted streams, lakes, wetlands, estuaries, marine waters, and groundwater basins in California and are important contributors of pollution to harbors and bays (California Plan 2000). According to the U.S. EPA's *The Quality of Our Nation's Waters*, metals,

pesticides, polychlorinated biphenyls (PCBs), and priority organics are the most frequently identified pollutants in estuaries, harbors, and bays. Urban runoff and storm sewers are the leading source of pollution in California's coastal waters (U.S. EPA 2000).

Current Status and Trends of Nonpoint Source Pollutants in the San Francisco Bay Estuary

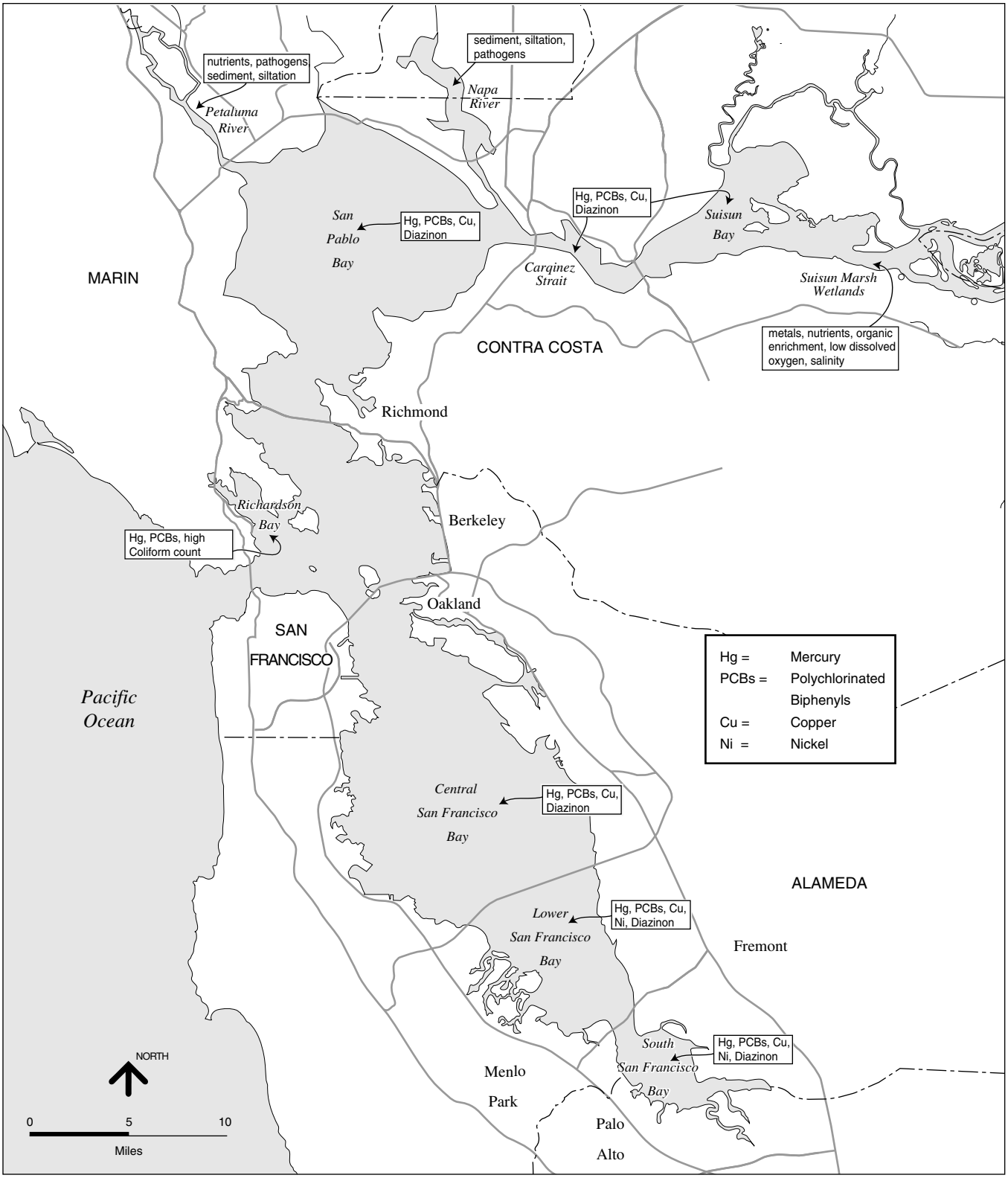
1. **California's 303(d) List, TMDL Priorities, Beneficial Uses**. Under Section 303(d) of the federal Clean Water Act (CWA), states must list surface waters not attaining water quality standards despite implementation of best practicable control technology, and states must perform a Total Maximum Daily Load (TMDL) for all waters on the 303(d) list, which essentially establishes the maximum allowable amount of pollution a waterbody can accept and allocates it among existing and potential sources. Point and nonpoint sources continue to impair the ability of San Francisco waterbodies to support the Regional Board's Basin Plan's formally designated beneficial uses for the Bay such as areas of special biological significance, warm and cold freshwater habitat, wildlife habitat, estuarine habitat, marine habitat, navigation, water contact and non-contact recreation, and municipal and domestic supply, that are the ultimate goals of protecting and achieving high water quality (Regional Board 1995).

2. **San Francisco Bay's Impaired Waterbodies: Pollutants, Sources and TMDL Priorities.** The San Francisco Bay is considered to be an impaired waterbody and is included on California's 1998 303(d) list because it exceeds certain water quality standards for trace metals such as copper, nickel, and mercury and for other contaminants and carcinogens such as polychlorinated biphenyls (PCBs), chlordanes, DDT, diazanon, exotic species, selenium, and pathogens. The list includes water bodies, pollutants / stressors, sources, and priorities for developing TMDLs. In the Carquinez Strait, Richardson Bay, Central San Francisco Bay, Lower San Francisco Bay, South San Francisco Bay, San Pablo Bay, and Suisun Bay, two of the main pollutants / stressors that have a high TMDL priority and are partially attributed to nonpoint sources are mercury and PCBs. Copper and nickel in the South San Francisco Bay also have a high TMDL priority and are partially attributed to sources of urban runoff / storm sewers. Richardson Bay has also been listed for high coliform count. Specifically, Waldo Point Harbor has been identified as the affected area, and substandard sewage systems in some houseboat areas have been identified as the source. This is considered a medium TMDL priority due to an extensive local control program in place with significant water quality improvements (California 303(d) list). The Napa and Petaluma Rivers

Figure 1

SOURCE: 1998 California 303(d) List and TMDL Priority Schedule

San Francisco Bay Waterbodies Having High or Medium TMDL Priorities Partially Attributed to Nonpoint Source Pollutants



have been listed for sedimentation/siltation with a high and medium TMDL priority, respectively, as well as for nutrients and pathogens, with medium TMDL priorities. Sources may include agriculture, construction/land development, and urban runoff/storm sewers. The Suisun Marsh wetlands are listed for metals, nutrients, organic enrichment/low dissolved oxygen, and salinity, all medium TMDL priorities. Sources may include agriculture, urban runoff/storm sewers, and flow regulation/modification (California 303(d) list) (See Figure 1).

3. **High Mercury Levels and Fish Consumption Advisories in San Francisco Bay.** According to the Regional Board's 2000 mercury TMDL report for San Francisco Bay, the bases for the 303(d) listing as impaired due to mercury can generally be described by two conditions: (1) the consumption of fish caught from the Bay have mercury levels that may threaten human health; and (2) the concentrations of total recoverable mercury in water particularly in the Lower San Francisco and South San Francisco Bay, exceed the Basin Plan numeric objective of 0.025 micrograms per liter (µg/L) (Regional Board 2000). Based primarily on data that came from the San Francisco Estuary's Regional Monitoring Program's 1997 fish contamination study, the California Office of Environmental Health and Hazard Assessment (OEHHA) has issued an interim fish consumption advisory for all of San Francisco Bay, based in part on mercury concentrations in fish caught in the Bay. The average concentration of mercury in San Francisco Bay fish is 0.3 µg/L. The U.S. Food and Drug Administration (FDA) recommends against consumption of fish with mercury concentrations greater than 1 microgram per gram (µg/g). The concentration in leopard sharks, a common Bay fish, frequently exceeds 1 µg/g and in striped bass, concentrations approach 1 µg/g (Regional Board 2000). Due to raised concern over elevated levels of mercury and PCBs in fish from San Francisco Bay and the issuance of a heath advisory recommending that individuals limit their Bay fish consumption, the San Francisco Estuary's Regional Monitoring Program (RMP) and the California Department of Health Services sponsored a survey of San Francisco Bay anglers and their fish consumption habits. The most common Bay fish eaten by anglers were: (in order) striped bass, halibut, jacksmelt, sturgeon, and white croaker (DHS 2001). Concentrations of mercury routinely exceed the numeric criteria and water quality objectives established in the Regional Board's Basin Plan due primarily to widespread sediment contamination by mercury remobilized during and after the Gold Rush. San Francisco Bay is a feeding and nesting ground for numerous

birds, with resident species most at risk. Mercury levels in the eggs of waterfowl have been shown to be higher in San Francisco Bay compared to other areas that don't have same history of mining sources and suggest impairment of reproductive success (Regional Board 2000).

4. **Major Pollutant Types Found in the San Francisco Bay Estuary, Impacts.** The San Francisco Estuary Project's 1992 State of the Estuary Report (SOE) describes the four major types of pollutants in the San Francisco estuary as: (1) inorganic chemicals, (2) natural and synthetic organic chemicals, (3) biological contaminants, and (4) suspended sediments and other particles. The most important *inorganic chemicals* are trace elements or trace or heavy metals and phosphorus and nitrogen. Trace metals occur naturally in low concentrations and enter the estuary in sewage and industrial effluent and urban and nonurban runoff at concentrations above background levels and in forms that are toxic. The trace elements for which there is most concern in the estuary are mercury, copper, nickel, zinc, and selenium (SFEP 2000). Nitrates and phosphates occur naturally at low concentrations and enable growth of algae and phytoplankton; they can be introduced at high levels in incompletely treated sewage or agricultural runoff. *Organic chemicals* include both natural and synthetic compounds, such as pesticides, plastics, fertilizers, solvents, and detergents that contain carbon. The most persistent and toxic compounds contain chlorine or bromine, such as PCBs and pesticides such as DDT, which were introduced into the estuary primarily as a result of former use and improper handling (SFEP 1992). Those that are of greatest concern in the estuary are PCBs, diazinon, chlorpyrifos, DDT, chlordane, dieldrin, dioxins, and polyaromatic hydrocarbons (PAHs) (SFEP 2000). *Biological pollutants* such as bacteria can harm human health and may enter the estuary from septic systems in untreated municipal sewage and recreational boat discharge, and in runoff from farms, feedlots and urban areas. Bacteria and viruses are of most concern, for example, municipalities monitor fecal coliform bacteria. *Sediments and other particles* may enter the estuary from shorelines and rivers by natural sources such as eroding soil and decomposing plant and animal wastes, as well as by anthropogenic sources. Disturbances to the land surface, such as residential construction and road building, can increase the amount of sediment transported (SFEP 1992).

5. **Top Known Contamination Problems in the San Francisco Bay Estuary.** Compared to background or reference sites, pollutants occur at elevated levels in the San Francisco Bay estuary's waters, sediments, and biota. The San Francisco Estuary

Institute (SFEI) 2000 *Pulse of the Estuary* reports the top known contamination problems as high levels of mercury and PCBs in fish and water and reports that monitoring sites in the lower South Bay, Petaluma and Napa River mouths, San Pablo Bay and Grizzly Bay are more contaminated than other sites, with the South Bay sloughs particularly contaminated (SFEI 2000). The largest input of mercury is likely from mining and from upstream rivers, with the second largest input likely from erosion and resuspension of contaminated sediments already in the Estuary, such as during construction and new development in the Guadalupe River floodplain in the South Bay (SFEI 2000). In fish, PCBs and pesticides were determined to be highest in white croaker and shiner surfperch. PCBs have been known to negatively affect the starry flounder's reproduction in the Central Bay as well as cormorant eggs and harbor seals. Fish from the Oakland Harbor contained higher contaminant concentrations than other locations, especially for PCBs and chlordanes (SFEI 2000). Additionally, toxic water and sediments are considered large problems in the estuary. Concentrations of mercury, PCB's, DDTs, chlordanes and PAHs, especially in the North Bay, particularly the mouth of the Petaluma River and San Pablo Bay, and South Bay sloughs frequently exceed water quality guidelines. For sediment, trace elements and organic compounds frequently exceed guidelines indicating possible harm to aquatic life, such as effects on the reproduction of an introduced clam in the Carquinez Strait area. Measurements of wetland sediment at Petaluma and China Camp marshes frequently found contaminated sediment concentrations slightly higher and occasionally two to ten times higher than San Pablo Bay (SFEI 2000). An SFEI study on contaminant loads from stormwater to coastal waters in the San Francisco Bay region found the largest loads of total suspended solids and many other contaminants to be highest for the Napa River hydrologic area, and found more urbanized areas with high estimated runoff volumes including East Bay cities, Palo Alto, Alameda Creek, and San Mateo Bayside, to contribute relatively large proportions of the total pollutant loads, especially for cadmium, lead, zinc, and other trace metals (SFEI 2000(a)). San Rafael, Berkeley, San Francisco Bayside, and Concord, having high percentages of commercial and industrial development land uses, were considered to contribute high loads of trace metals and phosphate (SFEI 2000(a)).

Major Categories of Potential Nonpoint Source Pollutants. The U.S. EPA has identified the following six categories of polluted runoff sources, which are also included in the California Plan: (1) Urban Runoff, (2) Agricultural Runoff, (3) Forestry Runoff, (4) Marinas and Recreational Boating; (5) Hydromodification, and (6) Alteration of Wetlands and Riparian Areas. As indicated above, the remainder of this chapter focuses on four of the NPS categories identified in the California Plan: (1) urban, (2) marinas and recreational boating, (3) hydromodification, and (4) wetlands and riparian areas.

1. **Urban Runoff: Problems and Impacts.** U.S. EPA's latest national water quality inventory states that runoff from urban areas is the leading source of water quality impairments to surveyed estuaries (U.S. EPA 2000). Landscapes that contain naturally vegetated areas such as grasslands and wetlands allow water to filter slowly into the ground and groundwater. When these areas are converted to land uses that have increased areas of impervious surface, such as paved roads and buildings, increased runoff volumes and pollutant loadings, as well as changes to the physical, chemical, and biological characteristics of the watershed are likely to occur. Urban landscapes such as roads, bridges, parking lots, and buildings don't allow runoff to percolate slowly into the ground, and more runoff is available to transport pollutants faster to stormdrains, creeks, wetlands, and bays (U.S. EPA Fact Sheet #1). Urbanization can also result in changes to the hydrology such as widening of stream channels and subsequent changes to the water depths, resulting in increased streambank erosion, increased sediment loads and damage to vegetation, all of which can have severe impacts on native fish and other aquatic life (U.S. EPA M.M. Ch. 4). In addition to increased runoff, the types and amounts of pollutants that are transported also increase in urban areas. Urban areas are primarily contributors of NPS pollutants such as heavy metals, for example copper from auto brake linings, hydrocarbons from oil and grease, nutrients from fertilizer or treated sewage, sediment from development and new construction sites, pesticides from gardens and landscapes, and pathogens from animal and human waste. Through complex systems of pipes, outfalls, and storm drains, most of these pollutants flow directly into creeks and rivers without treatment, eventually ending up in waterbodies such as the San Francisco Bay. According to the U.S. EPA, sediments and solids constitute the largest volume of pollutant loads to receiving waters in urban areas (U.S. EPA fact sheet #1). These types of pollutants can have myriad negative impacts on watershed ecosystems. Metals such as copper, mercury, and zinc are often toxic to fish and wildlife, bind to sediment and settle out, are consumed by clams and oysters and are passed up the food chain. High concentrations can cause cancer, nerve disorders, and

birth defects in humans. Nutrients encourage growth, can cause algal blooms, and stress ecosystems. Sediment can clog streams, choke fish, reduce sunlight, and harbor other pollutants. Pesticides can accumulate in the tissues and organs of fish and wildlife. Pathogens such as bacteria can cause health threats, threaten recreational uses, and contaminate shellfish (Lindsay Museum 1995). See Table 2, below, for an overview of general types of urban runoff pollutants, sources and impacts.

a. **Urban Runoff and Trace Metals in San Francisco Bay.** Urban runoff is considered to be a source for many trace elements, for example urban runoff is estimated to contribute seven to 59 metric tons of copper per year to the Bay / Delta estuary compared to 19 to 30 metric tons for municipal and industrial effluent (SFEP 1992). Many areas within San Francisco Bay have particularly high sediment concentrations of copper, lead, chromium, and zinc, including: Islais Creek (near the west end of the Bay Bridge), Alameda Naval Air Station, Channel Creek, Mare Island Strait and Hunters Point Naval Shipyard (SFEP Fact Sheet 1992). Copper and cadmium, toxic to many organisms in low concentrations, have been found to be unusually bioavailable in the Bay. Significant amounts of silver have been found in the South Bay. Studies on trace metals in water frequently exceed state water quality objectives for copper, lead, mercury, nickel, and tributyltin, and in sediments, extremely high concentrations of pollutants have been found at some sites, particularly harbors, harbor entrances, marinas, and industrial waterways (SFEP 1992).

b. **Urban Runoff and Other Contaminants in San Francisco Bay.** There are significant PCB concentrations in sediments, with Islais Creek the most contaminated site Bay-wide. DDT and its derivatives persist throughout the Bay-Delta ecosystem, and high levels of hydrocarbons are found around Islais Creek, Shell Marsh, and some North Bay refinery outfalls and fueling docks (SFEP Fact Sheet 1992). Many pollutants are most concentrated in the South Bay, in the Delta, off the Richmond / Berkeley shore or near effluent discharge sites. Levels of many pollutants found in animal tissues exceed alert levels (SFEP 1992). Fecal bacteria are commonly found in urban runoff and may result in

Table 2. Urban Runoff: Pollutants, Sources and Impacts
(Adapted from BCDC, 1999 and California Coastal Commission, 1995)

Pollutant Type/ Stressor	Sources	Potential Impacts
Heavy or Trace Metals, (e.g. Mercury, Copper, Nickel, Zinc, Selenium)	Motor fuel and exhaust Auto brake linings Leachate from landfills Illegal hazardous waste disposal/spills Consumer products Construction materials Naturally in soil	Disrupt fish reproduction Bioaccumulation in fish tissues and can be passed up the food chain Human health concerns: eating contaminated fish can cause brain damage, birth defects and miscarriages
Petroleum Hydrocarbons	Runoff from roads, parking lots, driveways Fluid and air emissions from motor vehicles (e.g., fuel, oil, grease, exhaust, brake-lining particles) Leaking underground storage tanks Accidental spills Illegal dumping	Toxic to aquatic life at low concentrations Highly persistent Alter reproduction and feeding behavior of marine organisms
Nutrients (e.g., nitrates and phosphates)	Improperly sited/maintained septic tanks Treated or partially treated sewage Garden and roadside fertilizers Pet excrement Landscaping practices	Fish kills and diseases Destruction of bottom-dwelling-habitats Algae blooms Increase turbidity, which can impact recreational activities Human health problems from nitrates in drinking water
Sediments and Other Particles	Erosion from land clearing, development, grading, construction, natural processes Dredging Stream channelization	Fill of marshes Smother aquatic spawning and feeding areas Destroy wetland habitats Reduce fish populations Increase dredging needs Increase turbidity, which can impact recreational activities Transport or harbor pollutants
Synthetic Organic Chemicals (e.g. DDT, PCBs	Household cleaners Paints Pesticides and herbicides Plastics Solvents Detergents	Reduce populations of desirable organisms Tendency to persist and bioaccumulate in the food chain Behavioral and structural changes Destroy food sources for higher-order organisms Acute or chronic effects in aquatic organisms
Bacteria & Pathogens	Improperly sited/maintained septic tanks Leachate from landfills Untreated municipal sewage Pet excrement	Contaminate drinking water supplies, shellfish beds, recreation areas Hepatitis or other infections Beach closures, limit recreational activities such as swimming, boating, surfing or diving, prohibitions on shellfish harvesting
Physical Parameters (Freshwater, Salinity, Temperature, Dissolved Oxygen)	Habitat alteration (e.g., land clearance, removal of vegetative cover, stream channelization) Increased freshwater runoff from new/existing impervious surfaces and stormwater drains Industrial discharges Decaying organic matter (e.g., garden trimmings)	Habitat loss Soil dispersion Deplete oxygen, which can cause reproductive problems in fish, alteration of aquatic species composition, destruction of benthic habitats Fish kills

health hazards at high concentrations. For example, following storms, bacteria counts in portions of the East Bay shoreline waters have increased one thousand-fold (SFEP 1992). Studies on stormwater runoff from urbanized locations in the Estuary determined that most samples were toxic and attributed the toxicity primarily to residential, business, and local government use of organophosphates (SFEI 2000).

c. **Concern Over Urban Runoff in San Francisco Bay.** The most compelling evidence that the U.S. EPA and the State are very concerned about NPS pollutants from urban runoff in the San Francisco Bay is the inclusion of these sources on the State 303(d) and TMDL priority list. For example, for South San Francisco Bay, urban runoff / storm sewers are listed among the sources for the pollutants copper and nickel. Additionally, the Regional Board's 1995 Basin Plan cites stormwater runoff, surface runoff and urban runoff as the leading cause of water pollution in San Francisco Bay. Although many data gaps exist in the Bay Area on the relative contributions of different sources of pollutants to the Bay, a recent SFEI study (SFEI 2000(a)) concludes that Bay Area stormwater runoff accounts for a large proportion of regional loading of some contaminants to the Bay.[8]

d. **Local Concern Over Urban Runoff in San Francisco Bay**. Local concern over urban runoff is evidenced by stormwater programs and other efforts such as Alameda County Clean Water Program (ACCWP), the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCV URPPP), the City of San Jose, and Marin County Stormwater Pollution Prevention Program (MC STOPPP) (see also Chapter 5). Tests by the ACCWP on creek flows and stormwater runoff throughout Alameda County show that "runoff often contains enough household pesticides (diazinon, chlorpyrifos) to kill the zooplankton that provide food for fish. Some creek waters contain copper, lead, and zinc in concentrations that could possibly affect aquatic life" (ACCWP Plan). Studies in Santa Clara County show that except for nutrients, urban runoff is the major source of many trace elements, biochemical oxygen demand, and total suspended solids in South Bay tributaries (SFEP 1992). In a 1997 SCV URPPP metals study, urban nonpoint pollutant sources were estimated to contribute 53 percent of the total load of copper, 39 percent of the total load of mercury, and 13 percent of the total load of

[8] Despite data gaps preventing comparisons among pathways, the study estimated that urban runoff accounted for 95% of the cadmium, 70% of the chromium, 89% of the copper, 76% of the nickel, and 82% of the zinc pollutant loads to the Bay (SFEI 2000(a)).

nickel to the Bay (SCV URPPP 1997). The goals and objectives of the City of San Jose's first flush monitoring project included identifying sectors in San Jose with the greatest pollutant loads and collecting and analyzing samples from major storm drain outfalls to identify the presence and relative magnitude of pollutants in different sectors of the stormwater system. As one component of the City of San Jose's Urban Runoff Management Plan, the City has targeted investigations on areas identified as high priority, including construction activities. In its 1999-2000 Annual Report, the City reported incidences of increased construction sediment discharges and anticipated revisions to its grading ordinance in FY 2000-2001. The MC STOPPP's Action Plan 2005 recognizes that various areas of Marin waterbodies, such as Central San Francisco Bay, Richardson Bay and San Pablo Bay are impaired for various pollutants and plan to participate in the Regional Board's TMDL development and implementation process (MC STOPPP 2000).

2. **Marinas and Recreational Boating: Problems.** An individual boater's contribution to the overall pollution problem may appear to be small, but considering there are 841,000 registered boats in California, the total contributions can be significant (SFEP MSD Fact sheet). According to the U.S. EPA, common pollutants that might be generated at a marina or enter a marina basin include "nutrients and pathogens, (from pet waste and overboard sewage discharge), sediments (from parking lot runoff and shoreline erosion), fish waste (from dockside fish cleaning), petroleum hydrocarbons (from fuel and oil drippings and spills and solvents), toxic metals (from antifoulants [used for barnacle control] and hull and boat maintenance debris), and liquid and solid wastes (from engine and hull maintenance and general marina activities)" (U.S. EPA MM Ch. 5). The U.S. EPA has also identified the following sources for boating and marina pollutants: poorly flushed waterways, boat maintenance, discharge of sewage from boats, storm water runoff from marina parking lots, and the physical alteration of shoreline, wetlands, and aquatic habitat during the construction and operation of marinas (U.S. EPA Fact Sheet #2).

3. **Marinas and Recreational Boating: Impacts**. Water pollution from boating and marinas can have numerous potential environmental impacts including: "high toxicity in the water; increased pollutant concentrations in aquatic organisms and sediments; increased erosion rates; increased nutrients, leading to an increase in algae and a decrease in oxygen (eutrophication); and high levels of pathogens" (U.S. EPA Fact Sheet #2). Furthermore, construction at marinas can create reduced water circulation from the

installation of docks or breakwaters, introduce pollutants, and result in the physical destruction of sensitive ecosystems and bottom-dwelling aquatic communities. The discharge of sewage, gray water, and waste into the Bay from commercial and recreational marine vessels can affect water quality. According to the Department of Boating and Waterways, "a weekend boater flushing untreated sewage into the water produces the same bacterial pollution as that of 10,000 people whose sewage passes through a treatment plant."[9] Sewage effluent can be a source of coliform bacteria, which can cause severe health problems, stimulate algae growth and have negative impacts on recreational opportunities. Excess fish waste can also stimulate algae growth and cause water quality problems (US EPA NPS Fact Sheet #2). Boat maintenance activities are often responsible for washing significant amounts of solvent, paint, oil, and other pollutants directly into surface water. The chemicals and metals in antifouling paint can limit bottom growth. Chlorine and phosphates found in many boat cleaners can harm plankton and fish. Petroleum hydrocarbons from fuel, oil, and grease tend to attach to waterborne sediments and tend to persist in aquatic ecosystems and to harm mussels, oysters or other bottom-dwelling organisms (U.S. EPA MM Ch. 2). U. S. EPA emphasizes that siting and design of marinas are two of the most significant factors impacting marina water quality and that poorly planned marinas can disrupt natural water circulation and cause shoreline soil erosion and habitat destruction (U.S. EPA Fact Sheet #2). Table 3 below, describes typical marina and boating-related pollutants, sources and impacts.

[9] This quote is from Kevin Atkinson at the Department of Boating and Waterways, at an interagency meeting on May 1, 2001 in Sacramento.

Table 3. Marinas and Recreational Boating: Pollutants, Sources and Impacts
(Adapted from BCDC, 1999 and California Coastal Commission, 1995)

Pollutant Type/ Stressor	Sources	Potential Impacts
Nutrients and Pathogens (e.g., Bacteria and Viruses)	Fecal coliform in sewage discharged by recreational and commercial boats Excess fish waste from dockside fish cleaning Pet wastes	Coliform bacteria can cause severe health problems such as Hepatitis Stimulates algae growth Limit recreational activities such as swimming, boating, surfing or diving Lower oxygen water levels Fish kills and diseases
Heavy or Trace Metals, (e.g. Mercury, Copper, Nickel, Zinc, Selenium), Chlorine, Phosphates	Boat operation, construction, maintenance and repairs Application of antifouling paints, pesticides, wood preservatives, and biocides Hull pressure washing Fuel additives Boat cleaners	Disrupt fish reproduction Destruction of bottom-dwelling habitats Bioaccumulation in fish tissues and can be passed up the food chain Human health concerns: eating contaminated fish can cause brain damage, birth defects and miscarriages
Petroleum Hydrocarbons	Refueling activities (fuel, oil , and grease) Bilge or fuel discharges Oil spills Runoff from parking areas Engine and hull maintenance	Toxic to aquatic life at low concentrations Attach to waterborne sediments and harm mussels, oysters, other bottom dwelling organisms Highly persistent Alter reproduction and feeding behavior of marine organisms
Shoreline Erosion and Sediment and Habitat Disruption	Marina construction and siting operations Natural wave activity and wave generation from boats (e.g., propeller wash/agitation) Dredging Parking lot runoff	Accelerate erosion (shearing and sloughing of streambanks), washes away fringe plants and animals Increase stream temperature Increase wetland habitat/riparian vegetation losses Increase need for additional dredging and maintenance of ports, marinas and recreational boat areas Increase transport of pollutants
Physical Parameters: Dissolved Oxygen, Water Circulation	Organic matter in sewage discharged by recreational a commercial boats High sediment chemical oxygen demand Poor flushing (from improper marina design) Marina construction, e.g., installation of docks or breakwaters	Habitat loss Soil dispersion Deplete oxygen, which can cause reproductive problems in fish, alter aquatic species composition, destruction of benthic habitats Fish kills and diseases Reduce water circulation

a. **Concern Over the Discharge of Pollutants in San Francisco Bay From Marinas and Boating.** There appear to be few studies addressing pollutants generated by or evident at marinas in San Francisco Bay; however, there is evidence of concern over the discharge of pollutants at marinas and from some boating activities.[10] Because many of the marinas in San Francisco Bay do not have point source discharges and are not involved in equipment cleaning and maintenance activities, they are not covered by stormwater permits, but still may generate or discharge many pollutants. The California Coastal Commission's Boating Clean and Green Campaign educates marina harbormasters and boaters in California, including San Francisco Bay, on the use of clean boating practices to prevent pollutants from entering the San Francisco Bay. The San Francisco Estuary Project also has a boater education program primarily focusing on boat sewage discharges and encouraging the use of pumpout stations.

b. **Vessel Wastes in Richardson Bay.** Vessel wastes from houseboats and other liveaboard vessels have been a particular concern in parts of the Estuary, specifically Richardson Bay, Alviso Slough, Redwood Creek and the Delta (SFEP Fact Sheet). Locally, Richardson Bay Regional Agency (RBRA) in the North Bay, along with the Regional Board, have been conducting bacteriological sampling for over five years at Richardson Bay marinas to assess whether water quality in the Bay is being impacted by the discharge of vessel wastes. U.S. EPA designated Richardson Bay a vessel waste no discharge zone in 1987 due to concern over the adverse affects of sewage discharges on Richardson Bay, which has a high use of water contact recreation activities. Three likely sources include unsewered houseboats in marinas, recreational boats berthed at marinas, and "anchor outs" boats used as primary residences in open waters (Regional Board 1998). Monitoring data show some excess of water quality objectives for fecal and total coliform at various marinas in Richardson Bay (e.g., Waldo Point Harbor) (RBRA 2000). RBRA has also been working with the Regional Board and BCDC's staff on sewer pumpout issues at marinas. As evidenced by its inclusion on the State's 303(d), there is still concern over coliform bacteria in Richardson Bay and specifically over Waldo Point Harbor and its substandard sewage systems in some houseboat areas.

[10] The State Board's 2000 California 305(b) Report On Water Quality indicates that one of the significant watershed issues for the Marin watershed is impacts on San Francisco and Tomales Bays from pollutants from marinas, houseboats, and boatworks.

c. **Other Studies and Concerns: Richardson Bay, San Francisco, San Mateo County**. A key finding of a Richardson Bay Dock and Boat Study conducted in 2000 identified that dock construction may result in increased nonpoint source pollution, which it attributed to boat maintenance activities, accidental spillage or leakage of petroleum products, and dumping of waste materials into the Bay (Marin County 2000). In San Francisco, there has been concern over the discharge and drainage of gray water and fish wastes into San Francisco Bay from fish processors along the waterfront, especially in areas below piers where the volume of discharge could be significant. The Port of San Francisco has developed a work plan for completing a comprehensive survey of storm water and non-stormwater discharges from Port owned facilities as requested by the Regional Board (Port of SF 2000). In 1997, San Mateo County Harbor District, which operates Oyster Point Harbor on San Francisco Bay, was working towards establishing the harbor as a no discharge zone, and also has implemented one of the first oil-contaminated bilge water collection program in the county (Boating Industry Supplement 1997).

4. **Hydromodification: Problems and Impacts**. According to the California Plan, hydromodification includes modification of stream and river channels, dams and water impoundments, and streambank/shoreline erosion. Channel modification, such as straightening, widening, deepening, or relocating channels, is often undertaken for the purpose of flood control, navigation, drainage improvement, and reduction of channel migration potential (U.S. EPA MM Ch. 6). Channel modifications can deprive wetlands and estuarine shorelines of enriching sediments, make riparian habitat for fish and wildlife unsuitable, alter the rates and paths of sediment erosion, transport and deposition, reduce the availability of fresh water, alter the instream water temperature, and through the hardening of banks, increase the velocity of NPS pollutants from the upper reaches of watersheds into coastal waters (California Plan 2000). Flow alterations can negatively affect a wide variety of living resources such as streamside vegetation, riparian habitat, and historic plant and animal communities. Restricted flows can also impede the movement of fish or other aquatic life. Table 4 below, provides a description of the general types of pollutants, sources and impacts associated with hydromodification activities.

Table 4. Hydromodification: Pollutants, Sources and Impacts
(Adapted from California Coastal Commission, 1995; California Plan, 2000)

Pollutant Type/ Stressor	Sources	Potential Impacts
Physical Parameters: Fresh Water, Salinity, Temperature	Flow alterations: diversions, withdrawals, impoundments Flood protection levees and dams Channelization Drainage improvements	Habitat loss Impede movement of fish or other aquatic life Deplete oxygen, which can cause reproductive problems in fish, alteration of aquatic species composition, destruction of benthic habitats Fish kills and diseases Reduce water circulation
Sediment and Habitat Alteration	Increased streambank and shoreline erosion Sediment delivery changes from channeling Channel modification activities: straightening, widening, deepening or relocating channels Draining and filling wetlands Removal of native vegetation that stabilizes slopes Construction of impervious surfaces	Deprive wetlands and estuarine shorelines of enriching sediments Increase turbidity, which can limit recreational activities Make riparian habitat for fish and wildlife unsuitable Alter rates and paths of sediment erosion, transport and deposition Increase need for dredging Reduce availability of fresh water Alter stream temperature Increase transport of pollutants
Overbank Area Contact Disruption	Instream hydraulic changes Dam construction	Reduce water contact in over-bank areas and pollutant filtering by streamside vegetation and soils Affect wetland drainage, groundwater quantity, erosion

a. **Concern Over Hydromodification in San Francisco Bay: San Pablo Bay.** There is evidence of concern over the pollutant potential of hydromodification activities within San Francisco Bay. The Napa and Petaluma Rivers have been listed for sedimentation / siltation on California's 303(d) list. A San Pablo Bay Watershed Restoration Study, a joint effort between the Coastal Conservancy, U.S. Army Corps of Engineers, and a San Pablo Bay watershed scoping committee, states that the San Pablo Bay watershed has experienced increased soil erosion, stream channel degradation, loss of riparian and oak woodland habitat, and declining groundwater values, and that declines were in part due to waterway modification and increased pollution (U.S. ACOE 1999). The Study identified dredging and waterway degradation, including waterway modifications such as navigation channels, flood control levees, and armored streambanks and shorelines, and erosion and sedimentation, including soil, surface, and channel erosion, among the issues of highest concern to San Pablo Bay's watershed health (U.S. ACOE 1999).

b. **Napa River Watershed**. Additionally, the Napa County Resource Conservation District has developed a Napa River Watershed Owner's Manual as an integrated resource management plan to address problems on a watershed basis. The Manual states that "identification of the Napa River by the U.S. EPA and the Regional Board as a priority pollutant contributor to San Pablo Bay has emphasized the need for proper management of the watershed to control sediment and other nonpoint sources of pollution in the watershed. In addition, the implementation of the Coastal Zone Management Act Reauthorization Amendments of 1990, and the State Nonpoint Source Pollution Management Program will address land management practices in the watershed in order to control pollutant loading (chiefly sediment) in the River and San Pablo Bay" (Napa RCD Plan). The Manual contains two relevant hydromodification objectives: promote stream stabilization using natural processes and reduce soil erosion. As a result of being "incised," or having its channels cut deeply into its floodplains, many Napa Valley streams have increased water velocity, resulting in increased bank failures and sediment production, as well as widely distributed pollutants in the sediment (Napa RCD Plan). Soil erosion and resulting sedimentation are among the most serious threats to the long term health of the ecosystem. Streambank erosion is one of the most significant contributors of sediment to the Napa River and is most relevant to hydromodification. This erosion can be attributed in part to anthropogenic sources such as land management practices, changes in hydrology, changes in infiltration rates, hardened surfaces and diversions (Napa RCD Plan). Specific objectives include: reduce streambank instability and erosion; reduce soil erosion resulting from urban and residential development, which is increasingly a significant source of soil erosion and sedimentation; minimize new road construction, which is one of the major sources of soil erosion, sediment production and habitat loss in the watershed; and manage public areas to minimize soil disturbance and threats of erosion (Napa RCD Plan).

5. **Wetlands and Riparian Areas: Benefits and Problems.** Wetlands can perform many functions that help prevent NPS pollution from degrading water quality. They can intercept runoff and transform and store NPS pollutants like sediment, nutrients, and certain heavy metals without being degraded, keep stream channels intact by slowing

runoff, and regulate stream temperature by providing streamside shading (U.S. EPA Fact Sheet #3). Wetlands and riparian areas reduce polluted runoff by filtering out runoff-related contaminants such as sediment, nitrogen and phosphorus (California Plan 2000). Wetlands degraded by excessive pollutant loads can no longer provide important water quality benefits, often become significant sources of NPS pollution and can result in increased biochemical oxygen demand, making habitat unsuitable for fish and other aquatic life (U.S. EPA Fact Sheet #3). As indicated in the 2000 California Plan, activities such as hydromodification, highway construction, and excavation for ports and marinas can result in impaired wetlands. Table 5 below, provides a description of typical types of pollutants, sources, and impacts associated with wetlands and riparian areas.

Table 5. Wetlands and Riparian Areas: Pollutants, Sources and Impacts
(Adapted from California Coastal Commission, 1995; California Plan 2000)

Pollutant Type/ Stressor	Sources	Potential Impacts
Urban Areas	Development and highway construction Filling wetlands Channelization Surface mining	Increase sediment and pollutant runoff Siltation Destroy wetland/riparian ecosystems
Physical Parameters: Dissolved Oxygen, Water Circulation	Decaying wetland vegetation Excess nutrients Changes to water flows: more frequent inundation, increased turbidity	Increase Biological Oxygen Demand Make habitat unsuitable for fish and other aquatic life Release stored nutrients and other chemicals
Hydromodification	Channel modification activities: straightening, widening, deepening or relocating channels Draining and filling wetlands Construction of impervious surfaces, e.g., highways Deposition of dredged material Excavation for ports and marinas	Impair ability of wetlands/riparian areas to filter out excess sediment and nutrients and to buffer receiving waters from the effects of polluted runoff Change species composition

a. **Concern Over Wetlands and Riparian Areas in San Francisco Bay.** The primary evidence that there is concern over wetlands and riparian areas in San Francisco Bay is taken from a 1999 BCDC staff report entitled *Polluted Runoff in the North Bay Planning Area*. This report was a background report for the North Bay Wetlands and Agriculture Protection Program, a voluntary partnership between BCDC and eight local governments in the San Pablo Bay area. One of the main purposes of the Program (described in Chapter 5) is to provide local governments with the tools and information needed to ensure the protection,

enhancement, and restoration of North Bay wetlands. As evidenced in the report, wetlands play an important role in protecting water quality, “thus we need to protect water quality in order to protect wetlands, and protect wetlands in order to protect water quality” (BCDC 1999). The report indicates the various impacts polluted runoff containing sediment, heavy metals, hydrocarbons, synthetic organic materials and bacteria can have on wetlands. For example, sediment can smother aquatic spawning and feeding areas, clog the gills of fish, and physically silt up wetlands; heavy metals can disrupt fish and shellfish reproduction and accumulate in fish tissues. Additionally, the report points out the harm from modifying wetlands. For example, new development can impact or destroy wetlands and altering wetlands can contribute to polluted runoff. One of the key strategies the report recommended for reducing polluted runoff is protecting riparian areas and vegetation, which can help reduce the impacts of polluted runoff and erosion, allow surface water to infiltrate the soil, and trap and filter soil particles carried by stormwater runoff (BCDC 1999).

CHAPTER 2

BCDC'S JURISDICTION AND AUTHORITY: AN OVERVIEW

This chapter describes the Commission's polluted runoff authority and provides recommendations for further authority analyses. Authority for specific management measures is addressed in the management measure chapter of this report (Chapter 8).

The Commission's Jurisdiction: An Overview. In general, the Commission's jurisdiction includes (1) the open water, marshes and mudflats of greater San Francisco Bay, including Suisun, San Pablo, Honker, Richardson, San Rafael, San Leandro and Grizzly Bays and the Carquinez Strait; (2) the first 100 feet inland from the shoreline around San Francisco Bay; (3) the portion of the Suisun Marsh-including levees, waterways, marshes and grasslands below the ten-foot contour line; (4) portions of certain creeks, rivers, sloughs and other tributaries that flow into San Francisco Bay; and (5) salt ponds, duck hunting preserves, game refuges and other managed wetlands that have been diked off from San Francisco Bay.

The types of activities that require a permit include the placement of fill, dredging or other extraction of materials, any substantial change in the use of an area, and most development in the Suisun Marsh. Examples of these activities include: (1) placing solid material, building or repairing docks, pile-supported or cantilevered structures, disposing of material or mooring a vessel for an extended period of time in San Francisco Bay or in certain tributaries that flow into the Bay; (2) dredging or extracting material from the Commission's jurisdiction; (3) substantially changing the use of any structure or area; (4) constructing, remodeling or repairing a structure; and (5) subdividing property or grading land.

The Commission has no control over the vast majority of polluted runoff coming into San Francisco Bay. The watershed for the San Francisco Bay-Delta Estuary drains approximately 40 percent of the State, and the Commission's jurisdiction generally extends only 100 feet landward from the mean high water line of the Bay and five feet above mean sea level in the Bay's tidal marshes. Thus, for example, the construction of a new residential subdivision in the foothills of the Sierras might generate erosion, increase the amount of runoff by covering the land with hard (impervious) surfaces, and change the amount and type of pollution by bringing more people to the area (for example, homeowners in the new subdivision may improperly use and dispose of

garden fertilizer or pesticides). All of these processes would lead to polluted runoff, some of which might ultimately reach the Bay. The Commission, however, would have no jurisdiction over that subdivision and could not control the type or amount of polluted runoff it may generate.

The Commission's authority over polluted runoff is not straightforward and depends partly on the location and jurisdiction of a given project. The laws and policies that apply to the Suisun Marsh, for example, may be different from those that apply to San Francisco Bay. Because the Commission's authority is complex, the analysis in this chapter focuses primarily on the Commission's authority in the Bay and the 100-foot shoreline band. However, the reader should keep in mind that the analysis is a generalization and specific authority depends on the context of a particular project. Within the Bay and the 100-foot shoreline band, the Commission's jurisdiction derives largely from the McAteer-Petris Act and the *San Francisco Bay Plan*.

The McAteer-Petris Act and *San Francisco Bay Plan*. The Commission's authority to consider the water quality impacts of Commission-approved projects and to require appropriate permit conditions stems from its regulatory authority set forth in the McAteer-Petris Act and the *San Francisco Bay Plan*. The primary power the Commission has over water quality protection is the issuing, conditioning and denying of permits. The Commission is required, by Section 66632, to issue a permit for a proposed project if the project is either (1) necessary to the health, safety, or welfare of the public in the entire Bay Area, or (2) consistent with the provisions of the McAteer-Petris Act and policies of the Bay Plan. The latter provision is the one the Commission usually relies upon when granting or denying a permit. Section 66632(f) of the McAteer-Petris Act empowers the Commission to grant a permit subject to reasonable terms and conditions including the uses of land or structures, intensity of uses, construction methods and methods for dredging or placing of fill.

When the Commission exercises its permitting authority pursuant to Section 66632(f), it must consider two sets of provisions containing water quality policies: Section 66605 of the Act itself, and the water quality sections of the Bay Plan. Section 66605(d) of the Act provides that the Commission shall authorize fill for a project only if specific conditions, including the following, are met: "the nature, location and extent of any fill should be such that it will minimize harmful effects to the bay area, such as, the reduction or impairment of the volume, surface area, or circulation of water, water quality, fertility of marsh or fish or wildlife resources, or other conditions impacting the environment…"

The McAteer-Petris Act contains specific provisions that apply to the 100-foot shoreline band. Section 66632.4 of the Act states that within any portion of the shoreline band located outside of a water-oriented priority use area, fixed and established pursuant to Section 66611 of the Act, the Commission may deny an permit application for a proposed project only if the project fails to provide maximum feasible public access, consistent with the proposed project, to the Bay and shoreline. Therefore, the Commission could not deny a permit application for a proposed project in the shoreline band based on a project's potential water quality impacts, but the Commission may have some ability to condition a permit to address those impacts. The Attorney General's Office is currently preparing an opinion discussing whether Sections 66605(c) through 66605(g) apply to the placement of fill only into the Commission's Bay and certain waterways jurisdiction or anywhere throughout the Commission's entire permit jurisdiction, including the 100-foot shoreline band. If the limiting criteria of Section 66605(d) apply to projects in the shoreline band, then the Commission has the legal foundation for conditioning such projects to protect against water quality impacts.

The Bay Plan has a section dedicated to water quality including several polluted runoff-related policies:

1. To the greatest extent feasible, the Bay marshes, mudflats, and water surface area and volume should be maintained and, whenever possible, increased. Fresh water inflow into the Bay should be maintained at a level adequate to protect Bay resources and beneficial uses. Bay water pollution should be avoided (italics added).
2. Water quality in all parts of the Bay should be maintained at a level that will support and promote the beneficial uses of the Bay as identified in the Regional Water Quality Control Board's Basin Plan. The policies, recommendations, decisions, advice and authority of the State Water Resources Control Board and the Regional Water Quality Control Board, should be the basis for carrying out the Commission's water quality responsibilities.
3. Shoreline projects should be designed and constructed in a manner that reduces soil erosion and protects the Bay from increased sedimentation through the use of appropriate erosion control practices.
4. Polluted runoff from projects should be controlled by the use of best management practices in order to protect the water quality and beneficial uses of the Bay, especially where water dispersion is poor and near shellfish beds and other

significant biotic resources. Whenever possible, runoff discharge points should be located where the discharge will have the least impact. Approval of projects involving shoreline areas polluted with hazardous substances should be conditioned so that they will not cause harm to the public or the beneficial uses of the Bay.

Moreover, the Bay Plan's water quality policies explicitly encourage the use of best management practices (BMPs) for polluted runoff, and explicitly identify the State Board and the Regional Board as the primary agencies to address water quality issues in the Bay (due to their legislative purpose and greater technical expertise and resources). The policies in the water quality section were amended by the Commission following a Bay-wide study of water quality conducted in 1987. Policies in other sections of the Bay Plan also address polluted runoff. These additional policies will be discussed in the Bay Plan policy chapter of this report (See Chapter 3).

Overall, the McAteer-Petris Act and the Bay Plan policies give the Commission broad authority to consider the water quality impacts and to require appropriate permit conditions for most Commission-approved projects.

The Suisun Marsh Preservation Act and Suisun Marsh Protection Plan. The Commission applies different standards to proposed marsh development within the primary management area and secondary management area of Suisun Marsh. For marsh development proposed within the primary management area, the Commission has direct permit authority. Under Section 29501 of the Marsh Act, the Commission must approve a marsh development project if it is consistent either with the policies contained in the Suisun Marsh Preservation Act (Marsh Act) and in the *Suisun Marsh Protection Plan (*Protection Plan)[11] or with the policies contained in the Marsh Local Protection Program, and if the marsh development project is also consistent with the policies contained in the *San Francisco Bay Plan*. If the policies contained in the Bay Plan are inconsistent with policies contained in the Marsh Act or Protection Plan or the Local Protection Program, the policies contained in the Marsh Act, Protection Plan, or Local Protection Program prevail. If a proposed marsh development is inconsistent with the policies

[11] It is important to note that "the appropriate policies of both the San Francisco Bay Plan and the Suisun Marsh Protection Plan shall apply within any area that is within the commission's jurisdiction, as defined in Section 66610 of the Government Code, and that is also within the marsh, as defined in Section 29101 of this code except where the San Francisco Bay Plan and the Suisun Protection Plan may conflict. If a conflict occurs, the policies of the Suisun Marsh Protection Plan shall control" (Section 29008 of the Suisun Marsh Preservation Act). The Commission has jurisdiction under the Suisun Marsh Preservation Act over Suisun Marsh including levees, waterways, marshes and grasslands below the ten-foot contour line.

contained in both the Marsh Act and Protection Plan and the Local Protection Program, the Commission should deny the application. If a proposed marsh development is inconsistent with any policies contained in the Bay Plan, and those Bay Plan policies are not inconsistent with the Marsh Act, Protection Plan, or Local Protection Program, the Commission should deny the application. For marsh development proposed in the secondary management area, the local government having jurisdiction decides whether or not to issue the marsh development permit, subject to a right of appeal to the Commission. If appealed to the Commission and the Commission determines that a substantial issue exists, the Commission reviews the proposed marsh development project as if it was a new project for compliance with the policies of the Local Protection Program. Section 29506 of the Marsh Act provides the basis for the Commission to condition permits to protect against water quality impacts and states that any permit that is issued or any development or action approved on appeal shall be subject to such reasonable terms and conditions as the Commission determines will ensure that such development or action will be in accordance with the provisions of this division and the Protection Plan.

When exercising its marsh development permit authority, the Commission considers several policies set forth in the Marsh Act, Protection Plan, and Local Protection Program. Many Marsh Act and Protection Plan policies concern water quality. Section 29003 of the Marsh Act, for example, identifies a need for provisions for establishment and maintenance of adequate water quality. Water quality policies Number 7 and 8 in the *Suisun Marsh Protection Plan* specify that riparian vegetation in the immediate watershed should be preserved, and stream modification minimized; and that local governments should adopt ordinances to control runoff. Finally, the Marsh is also governed by the Suisun Marsh Local Protection Program and Solano County's *Policies and Regulations Governing the Suisun Marsh*. To illustrate, Water Quality Policy Number 4 of Solano County's Policies and Regulations states that the development of industrial facilities adjacent to or upstream from the Marsh should be planned to eliminate significant adverse environmental impacts on the water quality of the Suisun Marsh, and that activities that could significantly alter the temperature, salinity or turbidity of the water should be prohibited.

Overall Legislative Authority and Jurisdiction. As mentioned above, the Commission's authority is multi-faceted and complex. One facet of this complexity stems from the federal Coastal Zone Management Act (CZMA). The CZMA requires federal activities, federal development projects, federally funded projects or projects requiring federal

permits to be consistent to the maximum extent practicable with BCDC's coastal zone management program. Projects are subject to the CZMA if they occur within the coastal zone or if they would affect the coastal zone, even if the projects are located outside of the coastal zone. Federal agencies submit consistency determinations for their proposed activities, and applicants for federal permits, licenses, other authorization, or federal financial assistance submit consistency certifications. BCDC then has the opportunity to review the consistency determinations and certifications and to either concur with or object to them. For a project with federal involvement, the Commission could object to a consistency determination or certification on the grounds that the project does not meet the Commission's policies, including those that protect water quality in the *San Francisco Bay Plan* or Suisun Marsh Preservation Act and *Suisun Marsh Protection Plan*. Thus, the CZMA would allow the Commission to look at polluted runoff issues in a federal or federally funded or approved project in the same manner that it could for a non-federal project. In performing such review, however, the Commission has only two options: (1) advise the federal agency that a project is consistent to the maximum extent practicable; or (2) advise the federal agency that a project is not consistent to the maximum extent practicable. The Commission has no power to grant, deny or condition permits as part of its federal consistency review.

These and other nuances of the Commission's polluted runoff authority should be explored in greater detail as resources allow (see Appendix A).

CHAPTER 3

THE BAY PLAN'S POLICIES ON POLLUTED RUNOFF

This chapter analyzes how polluted runoff is addressed in the Bay Plan and whether the policies are sufficient. In anticipation of the comprehensive update of the *San Francisco Bay Plan*, this chapter briefly reviews the existing Bay Plan policies, particularly the Water Quality findings and policies, to determine if they incorporate current scientific understandings of polluted runoff and provide adequate protection to the Bay from the hazards of polluted runoff. A review and possible update of the Bay Plan's water quality policies is scheduled to be part of the Commission's FY 01-02 work program.

The Bay Plan's Water Quality policy section contains the findings and policies most directly related to polluted runoff. Other sections, including Water Surface Area and Volume, Recreation, Dredging, and Marshes and Mudflats also include polluted-runoff related findings or policies. The policies from the Water Quality and Recreation sections are most relevant to the management measures in the California Plan, so these will be described and analyzed in greater detail below.

Water Quality. The Bay Plan findings on water quality state:

a. San Francisco Bay receives a variety of wastes from numerous sources throughout its tributary drainage area. These include industrial and municipal waste, urban and agricultural surface runoff, sedimentation from upland erosion, vessel wastes, oil and chemical spills, and leachate from landfills and toxic dumps. Pollution occurs when waste discharges unreasonably interfere with, damage, or destroy one or more of the beneficial uses of the waters of the Bay. Pollutants include substances that are toxic, that unduly stimulate organic growth in the Bay, or that deplete dissolved oxygen. Polluted waters may be offensive to the senses, unsafe for human contact or use, damaging or lethal to aquatic life, or unsuitable for industrial use.

b. Pollution from past waste discharges resulted in harm to fish and wildlife and the Bay's beneficial uses. Implementation of state and federal water pollution control programs by public agencies, particularly the U.S. Environmental Protection Agency, the State Water Resources Control Board, and the San Francisco Bay Regional Water Quality Control Board, have decreased significantly the pollutant levels in waste discharges to the Bay, resulting in dramatic improvements in the quality of Bay waters. However, water pollution still impairs Bay

water quality and the beneficial uses of the Bay. Of particular concern is the potential for cumulative long-term effects on the Bay from toxic pollutants. Water quality varies significantly within the Bay due to the pattern of waste discharges and the varying capability of the Bay to disperse, flush, and assimilate pollutants. Certain localized areas are seriously polluted with toxic substances. Additionally, toxic disposal sites on the shoreline threaten both Bay water quality and the development and use of certain areas of the shoreline by the public.

c. Many strategies can be used to reduce the discharge of pollutants to the Bay, including: (1) assuring adequate treatment of wastes discharged to the Bay and its tributaries in compliance with standards set by the State Water Resources Control Board, San Francisco Bay Regional Water Quality Control Board, and the U.S. Environmental Protection Agency; (2) directing treated waste discharges to the ocean (after assuring that the marine environment will be protected); (3) eliminating discharge of toxic substances into the Bay; (4) cleaning up existing toxic sites in the Bay, on the shoreline, or in upland areas that drain into the Bay; and (5) preventing increased sedimentation of the Bay by controlling upland soil erosion, particularly during the land development process.

d. The harmful effects of pollutants reaching the Bay can be reduced by maximizing its capacity to assimilate, disperse, and flush pollutants. Key elements that affect the Bay's natural capacity to assimilate, disperse, and flush wastes are: (1) the volume and circulation of water flowing in and out with the tides and in fresh water inflow; (2) the rate of oxygen interchange at the surface of the Bay; and (3) the extent and distribution of tidal marshes.

e. The State Water Resources Control Board is responsible for formulating and adopting state policy for water quality control pursuant to the state Porter-Cologne Water Quality Control Act and federal Clean Water Act. The State Water Resources Control Board is responsible for approving the water quality control plans of the nine regional water quality control boards, and establishing salinity standards for the Bay and Delta to protect the beneficial uses of these waters. The San Francisco Bay Regional Water Quality Control Board is charged with designating, protecting, and enhancing the beneficial uses of the waters of the San Francisco Bay Basin. The San Francisco Bay Regional Water Quality Control Board states the beneficial uses of the Bay waters and the water quality

objectives and waste discharge standards in its Water Quality Control Plan, San Francisco Bay Basin, which it carries out through adoption and enforcement of waste discharge requirements and certification of Army Corps of Engineers' permits.

The Bay Plan policies on water quality state:

1. To the greatest extent feasible, the Bay marshes, mudflats, and water surface area and volume should be maintained and, whenever possible, increased. Fresh water inflow into the Bay should be maintained at a level adequate to protect Bay resources and beneficial uses. Bay water pollution should be avoided.
2. Water quality in all parts of the Bay should be maintained at a level that will support and promote the beneficial uses of the Bay as identified in the Regional Water Quality Control Board's Basin Plan. The policies, recommendations, decisions, advice and authority of the State Water Resources Control Board and the Regional Water Quality Control Board, should be the basis for carrying out the Commission's water quality responsibilities.
3. Shoreline projects should be designed and constructed in a manner that reduces soil erosion and protects the Bay from increased sedimentation through the use of appropriate erosion control practices.
4. Polluted runoff from projects should be controlled by the use of best management practices in order to protect the water quality and beneficial uses of the Bay, especially where water dispersion is poor and near shellfish beds and other significant biotic resources. Whenever possible, runoff discharge points should be located where the discharge will have the least impact. Approval of projects involving shoreline areas polluted with hazardous substances should be conditioned so that they will not cause harm to the public or the beneficial uses of the Bay.

Recreation. The Bay Plan policies on Recreation state that: "the Commission…should allow additional marinas, boat launching lanes, and fishing piers elsewhere on the Bay, provided…they would not have significant adverse effects on water quality and circulation…." With regard to marinas, the policies, in part, state that "no new marina or expansion of any existing marina should be approved unless water quality and circulation will be adequately protected, and if possible improved…." With regard to live-aboard boats, the policies, in part, state that live-aboard boats should be allowed only in

marinas and only if "the marina would provide and maintain an adequate number of vessel sewage pumpout facilities…[and] there would be adequate tidal circulation in the marina to mix, dilute, and carry away any possible wastewater discharge."

Analysis. The Bay Plan's findings and policies address polluted runoff, stress the importance of water quality, make provisions for best management practices (BMPs), and establish broad goals to protect water quality. However the findings should be reviewed to determine whether and to what extent nonpoint source pollution is a water quality problem in the Bay and whether policy revisions may be appropriate to incorporate the latest local and scientific understandings about polluted runoff in the Bay, and to provide greater education function about polluted runoff. Examples of possible revisions to the Water Quality section include the following:

1. **Definition and Explanation.** The findings and policies mention polluted runoff, but they do not define the term, explain the problem or separate it from point sources of water pollution.[12] Nor do they highlight the connection to land uses (such as the relationship between impervious surfaces and water quality), or the connection to everyday activities (such as driving, walking the dog, or washing a car). More emphasis on polluted runoff would help the reader understand how she or he may be contributing to the polluted runoff problem. For example, gardeners use up to 10 times more toxic chemicals per acre than farmers. As another example, officials estimate that 50 million gallons of oil disappear from automobiles in California each year (in exhaust, dripped on roadways, or dumped by mechanics)[13]—twice the amount spilled as a result of the Exxon Valdez accident. Moreover, the water quality findings and policies neglect to clearly distinguish between point sources, such as an industrial pipe, and non-point sources of pollution. Given the extent of the polluted runoff problem and its different sources and regulatory structure, such a distinction may be warranted.

2. **Extent of the Problem.** The findings and policies do not describe the extent of pollution from polluted runoff. For example, polluted runoff may be responsible for a considerable proportion of the Bay's water quality problems (SFEI 2000(a)).

[12] An excellent description of the process comes from the Lindsay Museum's publication entitled "Changing the Course of California's Water:" "Water is the universal solvent, and when it falls as rain, the impact literally scours off contaminants that lie on rooftops, gardens, and sidewalks--from cigarettes to pet waste to slug poison." In most cities around the Bay (with the notable exception of San Francisco, which has a combined sewer/stormwater system), this polluted runoff enters the stormdrains, where it proceeds, untreated, to the Bay's creeks and/or the Bay itself.

[13] Pollution facts in this section are from the 1995 Lindsay Museum article entitled "Changing the Course of California's Water."

Other possible facts related to the extent of the problem include the following: (1) many of the Bay's water bodies have been impaired by polluted runoff due to trace metals and other contaminants such as PCBs and PAHs (California 303(d) list; SFEP 1992; SFEI 2000(a)); (2) polluted runoff creates long-term problems (for example, mercury from the gold rush is still polluting the Bay); (3) all urban runoff is contaminated.[14] Information on the extent of pollution, such as the status and trends information in Chapter 1 of this report, should be incorporated into any revised findings and policies.

3. **Focus on Prevention.** The findings and policies do not adequately focus on prevention through design, BMPs, and other mechanisms. For example, the focus on finding "c" is on assuring adequate treatment of wastes, or directing treated waste discharges to the ocean (although eliminating toxics from discharges is mentioned). However, current scientific thought emphasizes pollution prevention rather than treatment, since it is difficult to adequately treat wastes without polluting some medium (be it air, water, or land). Thus, the findings could be revised to place a greater emphasis on prevention through design, BMPs, and other appropriate measures.

4. **Connection to Wetlands.** Finding "d" notes that wetlands can assimilate, disperse, and flush pollutants. There is an opportunity to emphasize the importance of riparian habitats as well, since these also can assimilate and filter pollutants (although many riparian habitats are not within the Commission's jurisdiction). Moreover, there may be an opportunity here to describe the importance of water quality buffers.

Thus, during the upcoming review of the Water Quality policy section, these refinements could be considered to extend the educational value of the findings, and to incorporate up-to-date information about the status and extent of the polluted runoff problem. The policies appear to be sufficiently broad for the purposes of the management measures, although a more detailed examination should be conducted during the review of the Bay Plan.

In addition to the findings and policies in the Water Quality policy section, it may be appropriate to review the marina-related findings and policies in the Recreation policy section. For example, the Recreation findings do not discuss the special relationship

[14] 1995 Lindsay Museum article, "Changing the Course of California's Water."

between marinas and polluted runoff (i.e., unlike developments further ashore, a marina's polluted runoff will not be filtered through land or through riparian vegetation, and may reach the Bay in a more concentrated form). Moreover, the policies address vessel sewage, but not graywater, which is considered to be a source of pollution to the estuary (SFEP 1999; BCDC 1985). The policies also do not address fuel station design, waste management facilities, solid waste control issues, fish wastes, liquid material controls, petroleum controls, or boat cleaning and maintenance procedures, although several of these issues are incorporated into permit conditions. The Commission staff should undertake any marina studies in collaboration with recreational boating organizations, marina operators, federal, state, and local agencies and other interested parties.

CHAPTER 4

POLLUTED RUNOFF PERMIT CONDITIONS

This chapter reviews how BCDC currently addresses polluted runoff in its permits. To characterize the Commission's current polluted runoff permitting conditions, the staff analyzed fifteen permits issued between May 1999 and September 2000, including eight major permits, three administrative permits, three major permit amendments, and one regionwide permit (described below). These permits were selected to illustrate the range of different projects that are authorized by the Commission, and the various types of polluted runoff permit conditions that the staff imposes on a particular project.

This analysis responds to the following questions:

1. Which permits contain polluted runoff conditions, and which do not?
2. What kinds of permit conditions does BCDC use for polluted runoff? Are these conditions optimal, according to the Regional Board?
3. How does BCDC interact with the Regional Board with regard to permit applications? Which permits go through the Regional Board and which do not?

Type of Permits that Require Polluted Runoff Conditions and Type of Permits that do not. The Commission issues permits for projects within its Bay, 100-foot shoreline band, salt pond, managed wetlands, and certain waterways jurisdictions, and in the primary management area of the Suisun Marsh. The size, location, and impacts of a project often determine which type of permit is appropriate for a particular project. Generally, there are three types of permits that the Commission regularly issues. In the case of an emergency, any of the three types of permits can be issued almost immediately if a project is needed to protect life, health, or property. These permits include *Regionwide or Abbreviated Regionwide* permits, *Administrative* permits, and *Major* permits. Additionally, for projects in the primary management area of the Suisun Marsh, the Commission issues *Marsh Development* permits. *Regionwide or Abbreviated Regionwide* permits usually involve routine maintenance work that qualifies for approval under an existing Commission regionwide permit, and can be authorized in a very short period of time by the Commission's executive director without Commission review or a public hearing. These permits are already issued and further conditions can not be imposed on them; however, these permits do include some standard conditions that address water quality (see Appendix C). An *Administrative* permit can be issued for an activity that qualifies under BCDC's regulations as a minor repair or improvement in a relatively short period

of time and without a public hearing on the application. The proposed project must be reviewed against the same policies that are used to determine whether a major permit can approved. Because administrative permits typically include smaller projects than major permits, those projects may not require the same amount of scrutiny as projects considered under a major permit. However, the staff reviews each application separately, and if the staff believes a project is likely to have significant impacts on water quality, it may impose one or more special water quality permit conditions. These are often the same conditions that are imposed on major permits. A *Major* permit is issued for work that is more extensive than a minor repair or improvement. A public hearing is held on an application for a major permit and the application may be reviewed at hearings held by the Commission's advisory Engineering Criteria Review Board and Design Review Board. Within the primary management area of the Suisun Marsh, the Commission issues *Marsh Development* permits, which authorize development that is consistent with the applicable certified local protection program or, in the absence of a certified program, with the provisions of the Suisun Marsh Preservation Act and the policies of the *Suisun Marsh Protection Plan*. These acts, plan and programs require that existing land and water uses should continue and be protected and managed to enhance the quality and diversity of aquatic and wildlife habitat.

The staff considers various factors to help it decide whether or not to impose one or more special water quality permit conditions on a project, in addition to the standard permit conditions that are imposed. For example, as part of the analysis of the permit application, the staff often consults the Environmental Impact Report or other environmental documentation prepared for that project for potential water quality impacts. The staff also relies on their experience with past projects of a similar nature to include similar permit conditions. Before issuing a permit, the Commission considers any information that may be brought up at public hearings on the project, such as potential water quality impacts that may have been originally overlooked. The Commission also considers any input on projects from the Regional Water Quality Control Board or other relevant agencies, prior to issuing a permit.

From its review of recent permits, the staff determined that major permits, reflecting certain types of projects in the Commission's various jurisdictions, often contain polluted runoff conditions. Typical projects that include these permit conditions are large

fill projects such as the construction or expansion of marinas, bridges, or shipping terminals; marsh or wetland restoration; dredging; and waste discharge or clean up of hazardous waste. A brief description of each of the project types that the staff reviewed is included in Appendix B.

Some of the administrative permits the staff reviewed that did not require special water quality conditions were shoreline-band activities such as the installation of public access improvements; the placement of a small amount of concrete riprap along the riverbank of a certain waterway; the construction of a retaining wall in the Bay and shoreline band; and a pilot planting program along the shoreline of a creek.

Types of Permit Conditions Required for Polluted Runoff and Whether These Are Optimal According to the Regional Board. The Commission imposes various special permit conditions for projects that could have impacts on water quality, depending on the type of project and the nature or significance of the impacts. Additionally, two of the standard permit conditions included with every permit issued address water quality. Special conditions are often specialized to address the needs of a particular project. Typical requirements include discharge prohibitions, structural and non-structural best management practices, performance standards, plan review, reporting requirements, and other governmental approvals. The staff identified several water quality-related permit conditions from its review of permits. These conditions include: (1) directly-related special conditions (water quality, nonpoint source pollution control, dredging, marinas, marsh protection, diked wetlands protection, marsh restoration, Emergency Release Response Plan and Lease Agreement, control of invasive species-ballast water, creosote-treated wood, and sealing abandoned pipelines); (2) indirectly-related special conditions (shoreline protection, construction operations, debris removal, and soil removal); and (3) standard conditions (required permissions, and performance). Appendix C contains several examples of the types of polluted runoff-related permit conditions that the Commission has previously required. The Commission staff has begun and will continue conversations with the Regional Board staff to determine whether these permit conditions are optimal for addressing and controlling polluted runoff into the Bay and will work with the Regional Board to try to avoid duplicating their own permit conditions. Due to time constraints, this task needs to be further explored.

Interactions With the Regional Board on Permits and the Types of Permits that do and do not go through the Regional Board. The staff interacts with the Regional Board in different ways on various projects that may have water quality impacts, such as dredging, waste discharge or cleanup of hazardous wastes. For dredging projects, for example, the

Regional Board is required to act (for example, by issuing water quality certifications or waste discharge requirements) before the Commission files an application as complete. For outfall projects in the Bay and for the discharge of any gaseous, liquid, or thermal waste in the Suisun Marsh, Regional Board approval may be required before BCDC can issue its permit. For construction projects that disturb five or more acres of land, the Regional Board requires a National Pollutant Discharge Elimination System (NPDES) general permit and Storm Water Pollution Prevention Plan (SWPPP). These types of permits and plans typically need to be secured before BCDC can issue its permits. Section 66632(e) of the McAteer-Petris Act requires the Regional Board, within 30 days of receiving a copy of a filed Commission permit application, to provide the Commission with a report indicating the effect of the proposed project on Bay water quality.

For other types of projects, the Regional Board and BCDC coordinate at various stages of the permit application process. For example, for major permit applications, the staff sends a copy of the permit application to the Regional Board for review and comment at least 28 days before the Commission public hearing on the permit is scheduled. As noted earlier, the Regional Board is required to file a report with the Commission within 30 days of receiving a copy of the filed BCDC application. For administrative permit applications, the Regional Board receives a copy of BCDC's listing of administrative permits[15] two weeks before the Commission is scheduled to act on the proposed project. Additionally, under the McAteer-Petris Act, a member of the Regional Board is appointed to the Commission and can inform the Commission and staff about any particular water quality concerns with a project. The Regional Board also receives a copy of any permit the Commission issues. Furthermore, the Commission has a Memorandum of Understanding (MOU) with the Regional Board that states that the policies, decisions, advice and authority of the State Board and the Regional Board should be the primary basis for BCDC to carry out its water quality responsibilities (see Chapter 7 of this report for further discussion of the MOU).

[15] After the Commission staff determines that an application is complete, the Commission's executive director summarizes the application on a listing that is sent to the Commission, state agencies, and the general public. On this listing, the executive director indicates whether the staff proposes to approve or deny the application.

CHAPTER 5

LOCAL GOVERNMENT POLLUTED RUNOFF POLICIES AND PROGRAMS

This chapter analyzes whether polluted runoff and the management measures over which the Commission has authority and jurisdiction, are being addressed at the local level, and what the current gaps are. To answer these questions, the staff reviewed four representative local runoff management programs and their policies from the East Bay, South Bay, and North Bay in an attempt to identify management measure gaps that possibly could be addressed through BCDC's planning and/or regulatory program. This task was intended to help determine whether there is a need for the Commission to make extensive changes to its polluted runoff strategy if the desired management measures are being implemented at the local government level.

Representative local government efforts included: (1) the Alameda County-wide Clean Water Program (ACCWP) in the East Bay, (2) the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCV URPPP) and (3) the City of San Jose in the South Bay, and (4) the North Bay communities that are included as part of the North Bay Wetlands and Agriculture Protection Program, a partnership between BCDC and eight local governments in the San Pablo Bay subregion of the San Francisco Bay area.

Generally, these programs collectively appear to address one of the urban management measures, two of the marinas and recreational boating management measures, and four of the wetlands and riparian areas management measures. However, other programs not reviewed in this report may be helping to address other management measures. For example, Caltrans and Valley Transit Authority conduct stormwater controls on highway and bridge projects and may be addressing many of the urban management measures for roads, highways, and bridges (e.g. Measures 3.5A, 3.5B and 3.5C; see Table 7). All four programs appear to address the urban measure "Construction Site Erosion and Sediment Control." One program in the North Bay appears to help address the marinas and boating measures, "Solid Waste Control" and "Fish Waste," through promoting boater education. The City of San Jose and North Bay programs appear to help address the wetlands and riparian areas measures, "Protection of Wetlands and Riparian Areas," "Restoration of Wetlands and Riparian Areas," "Vegetated Treatment Systems," and "Education/Outreach" (along with the ACCWP and SCV URPPP).

From this review, it appears that the Commission could further its polluted runoff efforts most through addressing marina and recreational boating and hydromodification measures that do not appear to be addressed locally. It is important to understand that this review was designed to look at the types of local programs and policies that may already be addressing polluted runoff and not intended to be a comprehensive list of all local programs and polluted runoff policies that affect San Francisco Bay. Therefore, whether the gaps may be filled by other local programs is not clear, and the Commission may want to consider conducting additional studies on local programs in the future. The four programs that the staff reviewed and their applicable plans, policies, and activities that address the management measures indicated above are briefly described below and are included as part of the management measure review.

Alameda Countywide Clean Water Program (ACCWP). The ACCWP is a joint program consisting of 17 member agencies including: the Cities of Alameda, Albany, Berkeley, Dublin, Emeryville, Fremont, Hayward, Livermore, Newark, Oakland, Piedmont, Pleasanton, San Leandro, and Union City, Alameda County, Zone 7 of the Alameda County Flood Control and Water Conservation District, and Alameda County Flood Control and Water Conservation District. These participating agencies hold a joint permit from the Regional Board to discharge storm water to the Bay. The Clean Water Program helps the agencies ensure they are fulfilling their obligations under the permit. Major program areas include: regulatory compliance, planning and program management, focused watershed management, public information / participation, municipal maintenance activities, new development and construction controls, illicit discharge controls, industrial and commercial discharge controls, and monitoring and special studies.

The ACCWP appears to address at least two of the management measures in the NPS Plan: Urban-Measure 3.2A-"Construction Site Erosion and Sediment Control," and Wetlands, Riparian Areas-Measure 6-D-"Education and Outreach." The ACCWP has several programs for erosion control including new development and construction controls, which include: (1) tracking new development projects through the County; selecting case studies for incorporation of features that reduce runoff pollutants; (2) compiling information on cost-effective, pollutant-control features and devices that can be incorporated into new developments; (3) training building inspectors on how to reduce erosion and runoff pollutants at construction projects; (4) expanding outreach to developers, contractors, planning commissions and city councils; (5) meeting specified performance standards for reviewing development plans and construction sites; (6)

inventorying watersheds and identifying water-quality-sensitive areas and appropriate constraints on development; and (7) establishing policies for the operation and maintenance of flood control facilities (ACCWP Five Year Plan, p. 24). Additionally, through a New Development Subcommittee, the ACCWP sponsors workshops for staff and has developed recommended conditions for approving new projects. Furthermore, Alameda County municipalities require contractors to reduce erosion at construction sites and keep pollutants for construction materials away from storm drains and creeks.

The ACCWP also helps address the wetlands and riparian education outreach. For example, the ACCWP has a public information and participation program that targets specific stormwater pollutant sources for outreach, reinforces pollution prevention messages through educational materials, provides training, monitors local creeks, conducts special studies, and works with county, statewide, and regional agencies on pollution-prevention education (ACCWP Five Year Plan, p.22).

Santa Clara Valley Urban Runoff Pollution Prevention Program (URPPP). The SCV URPPP is an association of 13 cities and towns: Milpitas, Palo Alto, Cupertino, Los Altos, San Jose, Sunnyvale, Santa Clara, Los Altos Hills, Mountain View, the West Valley Communities (Campbell, Los Gatos, Monte Sereno, and Saratoga), the County of Santa Clara, and the Santa Clara Valley Water District. They share a common permit to discharge storm water to South San Francisco Bay (SCV URPPP Annual Report, p.ES-1). Major programs goals and objectives are included in an Urban Runoff Management Plan (URMP), which consists of an area-wide plan and individual Co-permittee plans that describe what the 15 co-permittees will do collectively and individually to reduce urban runoff pollution. The URMP contains performance standards for illicit connections / illegal dumping elimination, industrial / commercial discharge control, streets operation and maintenance (O&M), storm drain O&M, water utility O&M, new development planning procedures, and construction inspection that are implemented by the Co-permittees, as well as a framework for public information and participation activities and monitoring and watershed management measures (SCV URPPP Annual Report, p. ES-1).

The SCV URPPP appears to address at least two of the management measures in the NPS Plan: Urban-Measure 3.2A-"Construction Site Erosion and Sediment Control," and Wetlands, Riparian Areas-Measure 6-D-"Education and Outreach." Various programs address erosion and sediment control including urban runoff controls such as (1) supporting the Regional Board's Annual Workshop for contractors and municipal staff on construction site management and erosion / sediment controls; (2) implementing performance standards for construction inspection and new development planning

procedures; (3) participating in the development of region-wide training and certification program for construction site inspectors; (4) contributing to Bay Area Stormwater Management Agencies Association's (BASMAA) media relations campaign topic; (5) developing and distributing construction tri-folds; and (6) developing and distributing a "Start at the Source" manual and holding associated workshops. Additionally, the co-permittees that are part of the SCV URPPP have each developed an URMP that contains strategies for local urban runoff controls. These include, among other elements, performance standards, best management practices, and standard operating procedures that address, among other items, erosion and sediment control (see City of San Jose, below).

The SCV URPPP also helps address the wetlands and riparian education outreach. For example, the SCV URPPP has a public information and participation program that includes a watershed and education outreach strategy, conducts local and regional advertising, community outreach, outreach materials, and training. The SCV URPPP also conducts monitoring activities and performs special studies, which help provide a greater understanding of watersheds and wetlands.

City of San Jose. The City of San Jose is one of the co-permittees in the SCV URPPP. The City's Annual Report documents progress and accomplishments in implementing the City's URMP. Major program areas included in the City's URMP are an illicit connection / illegal dumping elimination program, industrial / commercial discharger control program, public streets, roads and highways / storm drain system O&M, water utility operation and maintenance, new development, monitoring, corporation yard operation and maintenance, and residential outreach and education.

The City of San Jose appears to address at least five of the management measures in the NPS Plan: Urban-Measure 3.2A-"Construction Site Erosion and Sediment Control" and all four of the Wetlands, Riparian Areas-Measures including, "Protection of Wetlands and Riparian Areas", "Restoration of Wetlands and Riparian Areas", "Vegetated Treatment Systems," and "Education and Outreach." Programs for erosion and sediment control include consideration by planning, building and code enforcement, and public works during the plan scoping and review stages of a project as well as during construction inspection. For example, the Planning Division of the Department of Planning, Building and Code Enforcement reviews development projects to identify storm water quality control measures for new development projects. All project managers are responsible for ensuring compliance with the City's Post Construction Urban Runoff Management Policy. Additionally, the following development controls are

implemented by the City: (1) the development community is provided with guidance on construction and post-construction measures early in the application process; (2) environmental documents required for a project address storm water quality impacts during and after construction and mitigation measures related to storm water quality; (3) developers of projects with significant storm water pollution potential are required by the City to mitigate storm water quality impacts to the maximum extent practicable, through proper site planning and design techniques and /or the addition of permanent storm water quality control measures; (4) developers of projects that disturb a land area of five acres or more are required by the City to demonstrate a conformance with the State General Construction Activity Storm Water Permit including filing of an NOI and the development of a SWPPP; and (5) developers of projects with potential for significant erosion and planned construction activity during the wet season are required by the City to prepare and implement an effective erosion and/or sediment control plan or similar document prior to the start of the wet season (City of San Jose, Annual Report, p. 43-48).

The City appears to address all four of the wetland measures through a combination of its Riparian Corridor policy study and draft Riparian Restoration Action Plan, as well as through its stormwater controls and outreach and education programs. The City's Riparian Restoration Action Plan serves to support the Riparian Corridor policy study. The purpose of the Plan is to provide a comprehensive policy framework for restoring degraded portions of the 35 streams located within San Jose's Urban Service Area. The Plan delineates current stream conditions and identifies potential restoration activities to improve riparian corridors for water quality and wildlife habitat enhancement. In addition to the Plan, a pilot riparian restoration project will test the guidelines in the Plan (City of San Jose, Annual Report, p. 44). The City promotes the use of engineered vegetated treatment systems such as constructed wetlands or vegetated filter strips (Measure 6C) through the incorporation of stormwater controls, such as the use of vegetated swales and inlet filters, into project designs. The City also conducts targeted residential outreach and education activities, and has coordinated with the Santa Clara Basin Watershed Management Initiative (WMI) on a watershed education and outreach strategy, as well as monitoring and programs for the inspection of industrial and commercial facilities, all of which help to increase people's understanding of watersheds.

North Bay Community Efforts. Eight local governments in the San Pablo Bay subregion of the San Francisco Bay area, Napa, Marin, Solano, and Sonoma Counties, and the Cities of American Canyon, Novato, San Rafael, and Vallejo, along with BCDC, comprised the North Bay Wetlands and Agriculture Protection Program. The background report that BCDC prepared on polluted runoff in April 1999, which the staff reviewed as part of this task, includes a section on "Efforts to Manage Polluted Runoff in the North Bay." This section identified the general strategies and tools that communities currently use to prevent polluted runoff. These strategies and tools include: education and technical assistance projects; general plans; specific plans; project review procedures; zoning and subdivision regulations; ordinances; design guidelines; voluntary waste minimization, household hazardous waste and water conservation programs; watershed-based plans; and baseline urban runoff programs.

The North Bay communities appear to help address at least four of the management measures in the NPS Plan: Urban-Measure 3.2A-"Construction Site Erosion and Sediment Control;" Marinas and Recreational Boating-Measures 4.2-A-"Solid Waste Control" and 4.2-B-"Fish Waste;" and Wetlands, Riparian Areas-Measure 6-A-"Protection of Wetlands and Riparian Areas." The programs that appear to address erosion control include general plan policies for erosion control; grading/erosion ordinances and required plans or reports; design guidelines or development standards; project review including discretionary review for all new development, NOI and SWPPP for projects greater than 5 acres, BMPS for new projects, plan review for post-construction water quality impacts, and inspections; baseline urban runoff programs (BURP), and watershed-based plans. An example of a BURP is the Marin County Stormwater Pollution Prevention Program (MCSTOPP), which incorporates region-wide educational programs, new development requirements, street sweeping programs, a legal framework, and other measures to control polluted runoff. An example of watershed-based plan is the Napa River Watershed Owner's Manual, which, among other things, includes recommendations for adopting measures to decrease and eliminate sedimentation from construction sites (see Chapter 1).

One of the programs in the North Bay, the Marin County Boater Education Program, appears to help address two Marina and Recreational Boating measures dealing with solid waste control and fish waste, which encourages recycling to limit the entry of solid waste to surface waters, and the promotion of sound fish waste management through public education.

Additionally, North Bay communities appear to address the protection of wetlands and riparian areas (Measure 6-A) through a combination of strategies including the project review process, Storm Water Pollution Prevention Plans (SWPPPs), BMPs, design review guidelines and development standards, riparian protection and wetland protection ordinances and watershed-based plans (Polluted Runoff Report, p. 21-31, App. C).

CHAPTER 6

POLLUTED RUNOFF AND THE BCDC PLANNING PROGRAM

This chapter analyzes how polluted runoff is addressed in BCDC's planning program. Polluted runoff is addressed not only through the Commission's policies and permit requirements, but also through its planning program. Several planning efforts the Commission has undertaken have involved polluted runoff or general water quality issues. These efforts allow the Commission to strategically address polluted runoff within its jurisdiction, and to provide education when the critical issue is outside of its jurisdiction.

For example, in 1985, staff completed a report examining the issue of houseboats and live-aboard boats. Although the primary purpose of the report was to develop Bay Plan policies concerning houseboats, the report also examined the water quality impacts of houseboats and live-aboard boats, including sewage and graywater discharges. Among other findings, the report recommended that the Commission adopt policies to minimize the water quality impact of these boats (including requirements for the marina to provide sufficient facilities on land (such as restrooms and showers), requirements that the marina provide and maintain an adequate number of sewage pumpout facilities in convenient locations, and requirements that there must be adequate tidal circulation in the marina to mix, dilute, and carry away any possible wastewater discharges. Many of these recommendations were subsequently adopted by the Commission and incorporated into the Bay Plan's Recreation policy section.

As another example, the Commission staff developed a background report on polluted runoff for the North Bay Wetlands and Agricultural Protection Program. This report described the general causes and impacts of polluted runoff, examined the sources of polluted runoff in the North Bay, and highlighted local efforts to manage polluted runoff, ranging from technical assistance programs to erosion control ordinances. The report also contained a number of recommendations to help local governments improve their polluted runoff strategies.

In another effort, the Commission staff undertook a comprehensive examination of water quality problems in the mid-1980s, culminating in a report entitled *Water Quality in San Francisco Bay*. This report lucidly explained Bay pollution problems (including physical mechanisms of pollution, and various pollutants such as pathogens, oil and grease, etc.), identified pollution sources (including point sources such as municipal

sewage discharges, and nonpoint sources such as urban runoff and vessel wastes), described pertinent state and federal water quality regulations, and proposed a number of new policies for the Bay Plan's section on Water Quality, many of which were subsequently adopted.

Moreover, the Commission has partnered with the California Coastal Commission to implement the California Clean and Green Boating Campaign, which was created specifically to address the non-point source pollution impacts of recreational boating. Together with Coastal Commission staff, the BCDC staff develops outreach materials on issues such as bilge water discharge, hazardous waste control and recycling at marinas, and environmentally friendly boat maintenance practices. These materials are distributed at key boat shows around the region. Also in conjunction with the Coastal Commission, BCDC staff conducts research projects regarding the impacts and prevention of boating pollution. For example, the staff conducted an extensive phone and mail survey in the Bay-Delta region to determine the adequacy of marina facilities for bilgewater pumpouts and hazardous waste control facilities. The BCDC staff also conducted an extensive search for environmentally-friendly boating and marina products in the process of developing a vendor list for distribution at boat shows. As another example, the BCDC staff often plays a role in maintaining the California Clean Boating Network (CCBN), a state-wide effort which works with boaters, marina-owners, industrial representatives, and others to discuss environmental issues related to recreational boating.

Thus, where appropriate, the Commission staff includes and addresses polluted runoff issues in its planning efforts, including its special area plans (such as the North Bay effort), issue plans (houseboats), scientific reports (such as the water quality report), or on-going educational efforts such as the Clean Boating Campaign.

CHAPTER 7

THE COMMISSION'S RELATIONSHIP WITH THE REGIONAL WATER QUALITY CONTROL BOARD

This chapter reviews the Memorandum of Understanding (MOU) between the Commission and the State Board and Regional Board and recommends that the MOU should be revisited. The Commission's 1988 MOU with the State Board and Regional Board establishes the Regional Board as the lead agency with regard to water quality issues in San Francisco Bay, including polluted runoff. The MOU notes that the Commission must, under its state McAteer-Petris Act authority, independently consider the water quality impacts of fill projects on San Francisco Bay; however, the State Board and Regional Board have the primary role in regulating water quality under state and federal statues. It also notes the Commission's desire to "rely on the expertise, advice, and policies of the State Board and the Regional Board concerning water quality," due to the Regional Board's greater expertise, authority, and resources. Furthermore, the MOU states that the "policies, decisions, advice, and authority of the State Board and the Regional Board should be the primary basis for the BCDC to carry out its water quality responsibilities."

The MOU also contains provisions for amendment, stating that the MOU should be reviewed periodically by BCDC, the State Board, and the Regional Board and amended, when necessary.

The MOU also incorporates attachments specifically regarding vessel wastes discharges, houseboat waste discharges, toxic sites, and delta outflow, enforcement and surveillance, and non-point source procedures. The attachments related to non-point source procedures, vessel waste discharges, and houseboat waste discharges are the most germane for BCDC's purposes.

The Non-Point Source Procedures (Attachment F) specifies that the Regional Board agrees "to determine the acceptability of control or treatment alternatives for non-point source pollutants, and agrees to provide BCDC with information on any proposed treatment or control alternatives for non-point source pollution, including recommended permit conditions." The MOU also specifies that BCDC will require in its permits the use of BMPs, treatment alternatives, and measures recommended by the Regional Board and contained in ABAG's manual of erosion control, consistent with its law and policies, in order to control non-point source pollution.

Attachment B, entitled "Houseboat Waste Discharge," specifies that BCDC "agrees to require as a condition of any permit it issues for any houseboat use in its jurisdiction that all houseboat wastewater producing facilities be connected directly to shoreside sewage treatment facility. Further, the Regional Board agrees to continue to advise the BCDC on the water quality impacts of houseboat use.…"

Attachment A addresses Vessel Waste Discharges. This attachment specifies that BCDC will require that new or expanding marinas provide an adequate number of vessel sewage pumpout facilities, directly connected to a shoreside sewage treatment facility, that are convenient in location and time of operation to recreational and live-aboard boat owners and users and that the service is provided free of charge or at a reasonable fee. The Attachment also specifies that the marina must provide on land sufficient and conveniently located restrooms and shower facilities adequate to serve recreational boat owners, live-aboard boat owners, and their guests.

Moreover, it acknowledges that the Regional Board will continue to monitor water quality in marinas and to provide BCDC advice about the water quality impacts of vessel waste discharges. Moreover, the attachment provides for a BCDC / Regional Board joint study to determine an adequate number of sewage pumpout facilities, the best locations for those facilities, and whether those facilities and dockside connections to onshore sewage treatment facilities should be required at San Francisco Bay commercial and military marine terminals.

The MOU with the Regional and State Board provides an adequate structure for interagency cooperation on polluted runoff issues. However, the MOU is over 10 years old and should be revised to update vessel wastes and marina conditions during the scheduled update process. Moreover, the MOU does not adequately stimulate on-going cooperation and discussion among the agency staffs; many staff members from both agencies are unaware of the MOU and its provisions. A bi-annual water quality meeting between the BCDC and Regional Board staffs may help remedy that problem. The MOU is scheduled to be revised this year due to changes to the Commission's dredging policies; this revision should also consider necessary polluted runoff issues at that time. This revision should at a minimum update the MOU's polluted runoff provisions and specify a bi-annual joint staff meeting to discuss water pollution control and mutually supportive actions by the agencies to improve the health and environment of San Francisco Bay.

CHAPTER 8

ANALYSIS OF APPLICABLE MANAGEMENT MEASURES

The California Plan identifies BCDC as an implementing agency for a number of management measures (see Table 6, below). This chapter describes and analyzes each identified management measure by applying the following strategies: (1) the Commission's authority for that management measure, primarily within the Bay, 100-foot shoreline band and the primary management area of Suisun Marsh (derived from the McAteer-Petris Act, Suisun Marsh Preservation Act and *Suisun Marsh Protection Plan*, and *San Francisco Bay Plan*); (2) relevant Bay Plan policies (in addition to those described in Chapter 3); (3) relevant permit conditions and planning efforts;[16] (4) local programs and policies related to the management measure; and (5) existing efforts of the Regional Board,[17] and future efforts of the State Board and / or the Coastal Commission (as determined through their recently released five-year polluted runoff plan addendum). The results of this analysis are depicted in Table 7 and are briefly summarized below for each management measure type (urban, marinas and recreational boating, hydromodification, and wetlands and riparian areas). (See Appendices C and D for examples of the polluted runoff-related permit conditions and Bay Plan policies included in Table 7.) The summary identifies possible gaps and highlights those management measures that are not currently addressed or where more Commission efforts may be warranted and provides possible actions for implementation, where appropriate. Table 8 provides a summary of identified management measures, the regulatory and planning efforts that appear to be addressing (or not addressing) them, an assessment of whether additional BCDC efforts are appropriate, and comments that refer to specific Work Program elements where appropriate.

[16] As determined by a review of 15 recent permits, supplemented by discussions with the permitting staff.
[17] As described to BCDC staff by the staff of the Regional Board.

Table 6: Management Measures Identified in the California Plan for BCDC Implementation

Urban Measures
Construction Site Erosion and Sediment Control (3.2-A)
New Onsite Disposal Systems (OSDSs) (3.4-A)
Planning, Siting, and Developing Roads and Highways (3.5-A)
Bridges (3.5-B)
Construction Projects (Roads, Highways and Bridges) (3.5-C)
Marina Measures
Water Quality Assessment (4.1-A)
Marina Flushing (4.1-B)
Habitat Assessment (4.1-C)
Shoreline Stabilization (4.1-D)
Stormwater Runoff (4.1-E)
Fueling Station Design (4.1-F)
Sewage Facilities (4.1-G)
Waste Management Facilities (4.1-H)
Solid Waste Control (4.2-A)
Fish Waste (4.2-B)
Liquid Material Control (4.2-C)
Petroleum Control (4.2-D)
Boat Cleaning and Maintenance (4.2-E)
Maintenance of Sewage Facilities (4.2-F)
Hydromodification Measures
Physical and chemical characteristics of surface waters (5.1-A)
Instream and Riparian Habitat Restoration (5.1-B)
Eroding Streambanks and Shorelines (5.3-A)
Wetlands and Riparian Measures
Protection of Wetlands and Riparian Areas (6-A)
Restoration of Wetlands and Riparian Areas (6-B)
Vegetated Treatment Systems (6-C)
Education/Outreach (6-D)

Urban Management Measures. As illustrated in Tables 7 and 8, most of the urban management measures appear to be well-addressed by the Regional Board and the State Board through the National Pollutant Discharge Elimination System permit process, as well as by local government programs and policies, with the exception of Management Measure 3.4A, "On-site Disposal Systems" (OSDS). However, OSDS such as septic tanks are typically situated outside of the 100-foot shoreline band and projects that come before the Commission are typically served by sewer systems, rendering the issue of polluted runoff from OSDS a low priority issue for the Commission. The State Board intends to establish uniform statewide performance standards for minimum criteria for OSDS siting and design. Should OSDS prove to be an issue in the future, the Commission may wish to require that permit applicants site OSDSs consistent with the upcoming State siting and design guidelines.

The Commission's existing regulatory and planning efforts appear to be appropriate to implement most of the urban management measures and the Commission should continue to require appropriate permit conditions for major and minor projects with the potential to cause significant water quality impacts. The Commission should consider including new permit conditions that specifically incorporate urban management measures, as appropriate.

Marinas and Recreational Boating Management Measures. As Table 8 illustrates, additional BCDC effort to implement a majority of the Marinas and Recreational Boating Management Measures (Marina Management Measures) may be appropriate. Many of these facilities are not currently addressed by the Regional Board, although the five-year State Board / Coastal Commission plan contains provisions to study certain aspects of marina facilities (such as water quality or provision of hazardous waste facilities). Moreover, the Marina Management Measures generally do not appear to be addressed by local government programs and policies, except for boater education programs.

Thus, the Commission's involvement in the Marina Management Measures is eminently appropriate. BCDC currently addresses the Marina Management Measures through its permit conditions, Bay Plan policies, and through the Boating Clean and Green Campaign (in conjunction with the Coastal Commission). The most pronounced marina measure gap concerns Management Measure 4.2B, "Fish Waste," which does not appear to be addressed by any regional agency (although it may be addressed to some degree by Marin County's local boating education program). Although there appears to be local concern over fish wastes from waterfront fish processing industries entering the Bay, it is not clear what the extent of the problem is at marinas in San

Francisco Bay. The Commission, in partnership with agencies such as the Coastal Commission, Regional Board, the Department of Fish and Game and the Department of Boating and Waterways (Boating and Waterways), should jointly assess whether fish waste issues are a problem in San Francisco Bay and if so, whether they could reasonably be incorporated into educational materials distributed by the Boating Clean and Green Campaign or the San Francisco Estuary Project, whether new guidelines or policies should be adopted by the commissions and agencies, and whether additional permit conditions should be considered to address prevention of fish waste pollution. Other gaps may exist in Management Measures 4.1A-2, 4.1H, and 4.2A (Water Quality Assessment for existing marinas, Waste Management Facilities, and, Solid Waste Control). It is not recommended that the Commission address these measures at this time, due to its limited authority in these matters and to the delegation of waste management matters to local governments.

The remainder of the Marina Management Measures does not reveal pronounced gaps, although it does suggest areas where more effort could be exerted. The Commission should coordinate with other agencies and entities to explore whether and to what extent marina-related nonpoint source pollution is a problem in the Bay, to identify whether additional Commission efforts are warranted, if any, to help resolve the problems, and to determine what those efforts should be. The Commission could improve its marina management polluted runoff strategies by undertaking the following actions:

1. **Coordination**. In order to prevent duplication of efforts, the Commission and the Regional Board should coordinate on the implementation of various management measures. For example, Measure 4.1A describes the need for water quality assessments. BCDC sometimes requires water quality monitoring in its permit conditions and the State Board stipulates in its addendum to the five-year plan that the Regional Board will assess the condition of water quality at 50 percent of the marinas in the Bay in the future (see Table 7). To facilitate data comparison, BCDC and the Regional Board should coordinate on this measure, determine priorities for assessment, and establish acceptable joint protocols for assessments. As another example, the State Board further stipulates that, to address Measures 4.2F and 4.1G (installation and maintenance of sewage facilities at marinas), the Regional Board will establish standards for a minimum number of sewage facilities, and assess existing enforcement efforts for sewage pump-out facility maintenance. BCDC should incorporate the Regional Board's standards into its special permit conditions once those standards have been promulgated. Moreover, the Commission often imposes and enforces permit requirements for sewage facilities, such as

waste discharge prohibitions, live-aboard requirements, or requirements for waste facilities, at new and expanding marinas. The Commission's enforcement program should review its current strategies for enforcing permit conditions related to sewage facilities and live-aboards and determine whether any improvements are warranted; it should also determine whether it may have water quality data that would help the Regional Board in its regional enforcement assessment.

2. **Review of Permit Conditions and Methods.** The Commission, in conjunction with the Regional Board, should determine whether BCDC's current special permit conditions reflect present scientific understandings of polluted runoff and state-of-the-art best management practices. As part of this effort, the Commission and Regional Board should assess: (1) whether additional marina-related permit conditions should be considered and, if so, what those conditions should be; and (2) whether changes should be made to special marina-related permit conditions. In addition, the Commission and Regional Board should assess whether innovative incentives (such as funding for marina capital improvements) or other non-regulatory techniques might substitute for or supplement new permit conditions. The Commission and the Regional Board should also determine whether existing methods for addressing marina water pollution problems, including the Commission's and Regional Board's permit and enforcement processes, and the State Board's general stormwater permit process, adequately address marina management measures or whether additional methods should be considered.

3. **Marina Design Study and Guidelines.** Developing guidelines for siting marina facilities to best minimize pollutants at new and expanding marinas can be a useful tool for the Commission to help marina owners minimize polluted runoff impacts. Guidelines such as these could address marina flushing (Measure 4.1B), habitat assessment (Measure 4.1C), stormwater runoff control (Measure 4.1E), fuel station design (Measure 4.1F), waste management facilities (4.1H), solid waste control (4.2A), and liquid material control (4.2C). Many of these management measures (e.g., Measures 4.1B, 4.1C, 4.1E and 4.1F) are not currently addressed by the Regional Board, are not addressed by the State Board and Coastal Commission's five-year polluted runoff plan, and do not appear to be addressed by local programs, except through education and outreach to marinas and boaters. With appropriate funding, the Commission should undertake such a study in partnership with agencies such as

Department of Boating and Waterways and the Regional Board. Additionally, the Commission and / or the Boating Clean and Green Campaign could encourage well designed marinas to avoid or minimize pollution by developing a prize for a "Clean and Green Marina" retrofit design.

4. **Shoreline Stabilization Methods and Policies.** Although the Commission currently has shoreline protection policies specified in the *San Francisco Bay Plan* (see Appendix D), the Commission should consider reviewing the shoreline protection findings and policies in the *San Francisco Bay Plan* to determine whether they should be revised to expressly address polluted runoff. As part of the review, the Commission should assess whether additional environmentally sensitive shoreline stabilization methods exist and, if so, determine whether they should be promoted. This action would help BCDC further address the marina shoreline stabilization measure (4.1D) as well as the hydromodification measure 5.3A (eroding streambanks and shorelines).

Hydromodification Measures. As Table 8 illustrates, for Hydromodification, a gap appears to exist in developing an O&M program for existing modified channels. However, the Commission's authority over existing modified channels (in absence of a new or existing permit condition) is quite limited. Thus, it is appropriate to allow other agencies such as the Regional Board to take the lead on this management measure. As depicted in Table 8, the other hydromodification management measures appear to be addressed by the Commission's plan review process and planning efforts, although only a limited number of relevant permit conditions appear to exist. Thus, the Commission and Regional Board staff should jointly assess whether additional special permit conditions should be developed.

Wetlands and Riparian Areas Management Measures. For Wetlands and Riparian Areas, there appears to be a gap in promoting the use of engineered vegetated treatment systems. Although BCDC's shoreline protection policies in the *San Francisco Bay Plan* promote nonstructural methods such as marsh vegetation where feasible in shoreline protective projects, these policies do not expressly promote vegetated treatment systems to serve a polluted runoff-abatement function. BCDC should review existing studies on the polluted runoff abatement functions of vegetated treatment systems and filter strips, and if warranted, promote their use through the design review process and through permit conditions, where appropriate. The other wetlands and riparian management measures appear to be well addressed by the Commission's permit conditions and planning efforts, as well as by local programs and policies.

TABLE 7: Application of Current Polluted Runoff Strategies to Identified Management Measures (continued)

Management Measure	BCDC Authority: McAteer-Petris Act, Suisun Marsh Preservation Act	BCDC Authority: San Francisco Bay Plan	Permit Conditions and Planning Programs	Local Programs and Policies	Regional Board (RWQCB) and State Board (SWRCB) Efforts
Urban-Measure 3.2-A-Construction Site Erosion and Sediment Control:					
(1) reduce erosion and to the extent practicable, retain sediment on site during and after construction;	Section 66632(f) of the McAteer-Petris Act; Section 29506 of the Suisun Marsh Preservation Act[1]	Water Quality Policy #3; Shoreline Protection Policies #1 and #3	Water Quality, Nonpoint Source Pollution Control, Best Management Practices, Construction Operations, Debris Removal, Standard;	*Alameda County Clean Water Program* (ACCWP): new development and construction controls: project tracking, training, outreach, performance standards; *Santa Clara Valley Urban Runoff Pollution Prevention Program* (SCV URPPP): performance standards for new development planning procedures, construction inspection; best management practices (BMPs); standard operating procedures (SOPs); workshops and training, outreach. *City of San Jose:* new development control measures, consideration by planning, building and code enforcement and public works during plan scoping and review stages and construction inspection. *North Bay* : general plan policies, ordinances, design guidelines, baseline urban runoff programs, project review process, watershed plans.	SWRCB: National Pollutant Discharge Elimination System (NPDES) program requires a permit and a stormwater pollution prevention plan for all construction projects over five acres; requirement for adequate sediment protection and BMPs regardless of a project's size; for smaller projects, local governments are issued discharge permits and require erosion and sediment-related BMPs from an applicant; RWQCB also conducts trainings on construction site management and erosion/sediment control
(2) prepare and implement prior to land disturbance, an effective, approved erosion and sediment control plan or similar administrative document that specifies erosion and sediment control provisions.	Section 66632(f) of the McAteer-Petris Act; Section 29506 of the Suisun Marsh Preservation Act	See above	Nonpoint Source Pollution Control	*City of San Jose:* requirement for developers of projects with potential for significant erosion and planned construction activity during wet season. *North Bay:* grading/ erosion ordinances, reports or plans	See above

TABLE 7: Application of Current Polluted Runoff Strategies to Identified Management Measures (continued)

Management Measure	BCDC Authority: McAteer-Petris Act, Suisun Marsh Preservation Act	BCDC Authority: San Francisco Bay Plan	Permit Conditions and Planning Programs	Local Programs and Policies	Regional Board (RWQCB) and State Board (SWRCB) Efforts
Urban-Measure 3.4-A-New Onsite Disposal Systems (OSDSs):					
(1) ensure OSDSs are located, designed, installed, operated, inspected, and maintained to prevent discharge of pollutants to the surface of the ground and to the extent practicable reduce the discharge of pollutants into ground water;	Section 66632(f) of the McAteer-Petris Act; Section 29506 of the Suisun Marsh Preservation Act. The majority (if not all) of the OSDS (such as septic tanks or mound systems) will be located within the shoreline band, where the Commission's jurisdiction is narrower.	The Bay Plan does not specifically address OSDSs.	Water Quality, Nonpoint Source Pollution Control; partially accomplished through permit application review[2]	None identified	RWQCB regulates large facilities directly, and other OSDSs through delegation to the counties. Each county has an MOU with the RWQCB setting forth appropriate conditions for OSDS permitting. OSDSs are also often regulated by local health control or sanitation departments. RWQCB informally recommends that OSDSs be placed 100 feet from any waterbody, including the Bay. SWRCB intends to establish uniform statewide performance standards for minimum criteria for OSDS siting and design.
(2) Direct placement of OSDSs away from unsuitable areas. Where not practicable, ensure that the OSDS is designed or sited at a density as not to adversely affect surface waters or ground water;	See above	See above	None identified	None identified	See above
(3) Establish protective setbacks from surface waters, wetlands and floodplains for conventional as well as alternative OSDS;	See above	See above	None identified	None identified	See above
(4) Establish protective separation distances between OSDS system components and groundwater;	See above	See above	None identified	None identified	See above
(5)Where conditions indicate that nitrogen-limited surface waters may be adversely affected by excess nitrogen loadings from ground water, prohibit the installation of OSDSs or require the installation of OSDS that reduce total nitrogen loadings to meet water quality objectives.	See above	See above	None identified	None identified	See above

TABLE 7: Application of Current Polluted Runoff Strategies to Identified Management Measures (continued)

Management Measure	BCDC Authority: McAteer-Petris Act, Suisun Marsh Preservation Act	BCDC Authority: San Francisco Bay Plan	Permit Conditions and Planning Programs	Local Programs and Policies	Regional Board (RWQCB) and State Board (SWRCB) Efforts
Urban-Measure 3.5-A-Planning, Siting, and Developing Roads and Highways:					
Plan, site, and develop roads and highways to:	Section 66632(f) of the McAteer-Petris Act; Section 29506 of the Suisun Marsh Preservation Act	Transportation Policy #2 and Finding "e"		Commission occasionally sponsors or participates in planning efforts, e.g., finding a way to expand Highway 37 while protecting and restoring sensitive wetlands resources.	RWQCB regulates these activities through NPDES permitting process. New roads and highways would require a stormwater pollution prevention plan.
(1) protect areas that provide important water quality benefits or are particularly susceptible to erosion or sediment loss;	See above	Water Quality Policies #2, #3	Water quality, Nonpoint Source Pollution Control, Construction Operations; Debris Removal;	See above	See above
(2)limit land disturbance such as clearing and grading and cut and fill to reduce erosion and sediment loss;	See above	Water Quality Policy #3	Partially accomplished through permit application review;	See above	See above
(3)limit disturbance of natural drainage features and vegetation.	See above	Water Quality Policy #3	Partially accomplished through permit application review	See above	See above
Urban-Measure 3.5-B-Bridges:					
Site, design, and maintain bridge structures so that sensitive and valuable aquatic ecosystems and areas providing important benefits are protected from adverse effects.	Section 66632(f) of the McAteer-Petris Act; Section 29506 of the Suisun Marsh Preservation Act	The Bay Plan does not address bridges directly, but it does provide policies to protect sensitive ecosystems (see Fish and Wildlife Policies #1 and #2, Marshes and Mudflats Policy #3, Water Quality Policy #1)	Partially accomplished through permit application review and through Marsh Protection, Nonpoint Source Pollution Control, Construction Operations, Creosote Treated Wood	None identified	RWQCB does not issue permits for bridges directly but rather for required fill, on which the RWQCB can impose conditions to protect aquatic ecosystems.

TABLE 7: Application of Current Polluted Runoff Strategies to Identified Management Measures (continued)

Management Measure	BCDC Authority: McAteer-Petris Act, Suisun Marsh Preservation Act	BCDC Authority: San Francisco Bay Plan	Permit Conditions and Planning Programs	Local Programs and Policies	Regional Board (RWQCB) and State Board (SWRCB) Efforts
Urban-Measure 3.5-C-Construction Projects (Roads, Highways and Bridges):					
(1) Reduce erosion and, to the extent practicable, retain sediment on site during and after construction;	Section 66632(f) of the McAteer-Petris Act; Section 29506 of the Suisun Marsh Preservation Act	Transportation Policy #2 and Finding "e"; Water Quality Policy #3; Shoreline Protection Policies #1 and #3	Water quality, Nonpoint Source Pollution Control, Best Management Practices; Construction Operations; Debris Removal; Standard;	None identified specifically for Roads, Highways and Bridges, but see Urban Measure 3.2-A, Local Programs and Policies on Erosion	SWRCB: National Pollutant Discharge Elimination System (NPDES) program requires a permit and a stormwater pollution prevention plan for all construction projects over five acres; requirement for adequate sediment protection and BMPs regardless of a project's size; for smaller projects, local governments are issued discharge permits and require erosion and sediment-related BMPs from an applicant; RWQCB also conducts trainings on construction site management and erosion/sediment control
Urban-Measure 3.5-C-Construction Projects (Roads, Highways and Bridges):					
(2) Prior to land disturbance, prepare and implement an approved erosion control plan or similar administrative document that contains erosion and sediment control provisions.	See above	Water Quality Policy #3; Shoreline Protection Policies #1 and #3	Nonpoint Source Pollution Control	See above	See above

TABLE 7: Application of Current Polluted Runoff Strategies to Identified Management Measures (continued)

Management Measure	BCDC Authority: McAteer-Petris Act, Suisun Marsh Preservation Act	BCDC Authority: San Francisco Bay Plan	Permit Conditions and Planning Programs	Local Programs and Policies	Regional Board (RWQCB) and State Board (SWRCB) Efforts
Marinas & Rec. Boating-Measure 4.1-A-Water Quality Assessment:					
(1) Assess water quality as part of the siting and design of new and expanding marinas to establish baseline water quality conditions or trends;	Section 66632(f) of the McAteer-Petris Act	Recreation Policies #2 and #4 (b)	Partially accomplished through permit application review; Marinas: Monitoring; Boating Clean and Green Campaign	None identified	RWQCB does not currently require new and expanding marinas to assess water quality, although it does have the authority to do so (through California Code Section 13267). Because of the technical difficulties in testing marina water quality, the RWQCB focuses on BMPs and educational measures rather than assessments. RWQCB does require coliform assessments in Richardson Bay because it is a No Discharge Zone. SWRCB has established a statewide objective to determine baseline water quality in at least 50% of California's marinas by 2003. Regional Boards will conduct an inventory of existing water quality data at marinas and establish baseline water quality data for marinas in their region.
(2) Assess water quality at existing marinas to establish baseline water quality conditions.	In most cases, the Commission would not have authority to assess water quality at existing marinas unless associated with a pre-existing permit, since the Commission's jurisdiction is limited to new fill, dredging, and changes of use.	None identified	None identified	None identified	See above

TABLE 7: Application of Current Polluted Runoff Strategies to Identified Management Measures (continued)

Management Measure	BCDC Authority: McAteer-Petris Act, Suisun Marsh Preservation Act	BCDC Authority: San Francisco Bay Plan	Permit Conditions and Planning Programs	Local Programs and Policies	Regional Board (RWQCB) and State Board (SWRCB) Efforts
Marinas & Rec. Boating-Measure 4.1-B-Marina Flushing:					
Site and design new and expanding marinas such that tides and/or currents will aid in flushing of the site or renew its water regularly.	Section 66632(f) of the McAteer-Petris Act	Recreation Policies #2, #4 (b), (c)	Partially accomplished through permit application review	None identified	None identified
Marinas & Rec. Boating-Measure 4.1-C-Habitat Assessment:					
Site and design new and expanding marinas to protect against adverse effects on shellfish resources, wetlands, submerged aquatic vegetation, or other important riparian and aquatic habitat areas as designated by local, State, or federal governments.	Section 66632(f) of the McAteer-Petris Act	Recreation Policy #2	Partially accomplished through permit application review and through Marinas: Construction, Waste Discharge, Waste Facilities, Marine Toilets, Best Management Practices, Monitoring; Dredging	None identified	None identified
Marinas & Rec. Boating-Measure 4.1-D-Shoreline Stabilization:					
Where streambank or shoreline erosion is a nonpoint source pollution problem, streambanks/shorelines should be stabilized; vegetative stabilization methods preferred over structural stabilization methods.	Section 66632(f) of the McAteer-Petris Act. The Commission has authority to require conditions for new, but not existing, shoreline erosion projects.	Shoreline Protection Policies #1 - #4. Policies express preferences for vegetative methods of stabilization; Water Quality Policy #3.	Shoreline Protection: riprap material, riprap placement, riprap plans, maintenance; Sea Level Rise: Predictions and Implications for San Francisco Bay planning report	None identified	RWQCB policies and educational efforts also favor natural vegetation over rip-rap. However, RWQCB regulates shoreline stabilization on a case by case basis. The SWRCB/ Coastal Commission five-year polluted runoff plan does not address this management measure.

TABLE 7: Application of Current Polluted Runoff Strategies to Identified Management Measures (continued)

Management Measure	BCDC Authority: McAteer-Petris Act, Suisun Marsh Preservation Act	BCDC Authority: San Francisco Bay Plan	Permit Conditions and Planning Programs	Local Programs and Policies	Regional Board (RWQCB) and State Board (SWRCB) Efforts
Marinas & Rec. Boating-Measure 4.1-E-Stormwater Runoff:					
Implement effective runoff control strategies which include the use of pollution prevention activities and the proper design of marinas and boat maintenance areas (including parking areas). Reduce the average annual loadings of total suspended solids (TSS) in runoff from these areas to meet water quality objectives.	Section 66632(f) of the McAteer-Petris Act. The Commission has authority to require conditions in connection to a new permit for fill, dredging, and changes in use. In the absence of a new project, the Commission may not impose new conditions on an existing marina.	Recreation Policy #2, Water Quality Policy #4	Marinas: Construction, Waste Discharge, Waste Facilities, Marine Toilets, Best Management Practices, Monitoring, Floating Debris Barrier; Water Quality, Nonpoint Source Pollution Control	None identified	Most marinas are not under an NPDES permit. Even if a permit exists, many aspects of a marina, such as its parking area, or activities on docks, would not come before the RWQCB for consideration. These areas and activities are more likely to be addressed under the State's general stormwater permit program orincluded in local stormwater programs. The SWRCB/Coastal Commission five-year polluted runoff plan does not address this management measure.
Marinas & Rec. Boating-Measure 4.1-F-Fueling Station Design:					
Design existing and proposed fueling stations to allow for spill prevention and for ease in cleanup of spills that may occur.	Section 66632(f) of the McAteer-Petris Act. The Commission has authority to require conditions in connection to a new permit for fill, dredging, and changes in use. In the absence of a new project, the Commission may not impose new conditions on an existing marina.	None identified	Marinas: Fuel Dock	None identified	Boatyards and marinas with fueling stations are technically required to obtain an NPDES permit. The NPDES permit process would allow the RWQCB to consider aspects of fuel station design. Most marinas, however, are not under an NPDES permit at this time. The SWRCB/Coastal Commission five-year polluted runoff plan does not address this management measure.

TABLE 7: Application of Current Polluted Runoff Strategies to Identified Management Measures (continued)

Management Measure	BCDC Authority: McAteer-Petris Act, Suisun Marsh Preservation Act	BCDC Authority: San Francisco Bay Plan	Permit Conditions and Planning Programs	Local Programs and Policies	Regional Board (RWQCB) and State Board (SWRCB) Efforts
Marinas & Rec. Boating-Measure 4.1-G-Sewage Facilities:					
Install pumpout, dump station, and restroom facilities where needed at new and expanding and existing marinas to reduce the release of sewage to surface waters. Design these facilities to allow ease of access and post signage to promote use by the boating public.	Section 66632(f) of the McAteer-Petris Act. The Commission has authority to require conditions in connection to a new permit for fill, dredging, and changes in use. In the absence of a new project, the Commission may not impose new conditions on an existing marina.	Recreation Policies #4 (b), (c)	Marinas: Waste Facilities, Marine Toilets, Live-Aboard Boats	None identified	Not currently addressed by RWQCB but SWRCB/Coastal Commission five-year plan stipulates that the RWQCB will establish standards for the minimum number of sewage facilities per recreational vessels, and provide for the installation and maintenance of an adequate number of sewage facilities in the region. The RWQCB, in conjunction with the San Francisco Estuary Project, will also assess the effectiveness and enforcement of current vessel sewage waste programs in the region. RWQCB is charged with establishing agreements for inspection of pumpout facilities, and establishing clear lines of authority for enforcement of violations.
Marinas & Rec. Boating-Measure 4.1-H-Waste Management Facilities:					
Install facilities where needed for the proper recycling or disposal of solid wastes and liquid materials generated by users of marinas and boat maintenance areas. Design these facilities to allow ease of access, post signage to promote use by the boating public, and encourage recycling to the fullest extent possible.	Section 66632(f) of the McAteer-Petris Act. The Commission has authority to require conditions in connection to a new permit for fill, dredging, and changes in use. In the absence of a new project, the Commission may not impose new conditions on an existing marina.	Recreation Policy #4 (c) (pertaining to garbage disposal facilities for live-aboard boats)	Marinas: Waste Discharge, Waste Facilities, Live-Aboard boats; Boating Clean and Green Campaign	None identified	RWQCB currently delegates this matter to local counties and waste management facility agencies. Five-year SWRCB/Coastal Commission polluted runoff plan states the two agencies will assess existing hazardous waste disposal and used oil recycling services available to recreational boaters.

TABLE 7: Application of Current Polluted Runoff Strategies to Identified Management Measures (continued)

Management Measure	BCDC Authority: McAteer-Petris Act, Suisun Marsh Preservation Act	BCDC Authority: San Francisco Bay Plan	Permit Conditions and Planning Programs	Local Programs and Policies	Regional Board (RWQCB) and State Board (SWRCB) Efforts
Marinas & Rec. Boating-Measure 4.2-A-Solid Waste Control:					
Properly dispose of solid wastes produced by the operation, cleaning, maintenance, and repair of boats and operation of marinas-and encourage recycling of recyclable materials to the fullest extent possible-to limit entry of solid wastes to surface waters.	Section 66632(f) of the McAteer-Petris Act. The Commission has authority to require conditions in connection to a new permit for fill, dredging, and changes in use. In the absence of a new project, the Commission may not impose new conditions on an existing marina.	Recreation Policy #4 (c) (pertaining to garbage disposal facilities for live-aboard boats)	Marinas: Waste Discharge, Waste Facilities, Marine Toilets; Boating Clean and Green Campaign	*North Bay:* Marin County boater education program	RWQCB defers to the local authorities and the State Department of Toxic Substances Control on this matter. Five-year SWRCB/Coastal Commission polluted runoff plan states the two agencies will assess existing hazardous waste disposal and used oil recycling services available to recreational boaters.
Marinas & Rec. Boating-Measure 4.2-B-Fish Waste:					
Promote sound fish waste management through a combination of fish-cleaning restrictions, public education, and proper disposal of fish waste.	Section 66632(f) of the McAteer-Petris Act. The Commission has authority to require conditions in connection to a new permit for fill, dredging, and changes in use. In the absence of a new project, the Commission may not impose new conditions on an existing marina.	None identified	None identified	*North Bay:* Marin County boater education program	None identified
Marinas & Rec. Boating-Measure 4.2-C-Liquid Material Control:					
Provide and maintain appropriate storage, transfer, containment and disposal facilities for liquid material-such as fuel, oil, solvents, antifreeze, and paints-and encourage recycling of these materials to the fullest extent possible.	Section 66632(f) of the McAteer-Petris Act. The Commission has authority to require conditions in connection to a new permit for fill, dredging, and changes in use. In the absence of a new project, the Commission may not impose new conditions on an existing marina.	None identified	Marinas: Waste Discharge, Waste Facilities; Boating Clean and Green Campaign	None identified	RWQCB defers to local hazardous waste management departments on this issue. Five-year SWRCB/Coastal Commission polluted runoff plan states the two agencies will assess existing hazardous waste disposal and used oil recycling services available to recreational boaters.

TABLE 7: Application of Current Polluted Runoff Strategies to Identified Management Measures (continued)

Management Measure	BCDC Authority: McAteer-Petris Act, Suisun Marsh Preservation Act	BCDC Authority: San Francisco Bay Plan	Permit Conditions and Planning Programs	Local Programs and Policies	Regional Board (RWQCB) and State Board (SWRCB) Efforts
Marinas & Rec. Boating-Measure 4.2-D-Petroleum Control:					
Reduce the amount of fuel and oil from boat bilges and fuel tank air vents entering marina and surface waters.	Section 66632(f) of the McAteer-Petris Act. The Commission has authority to require conditions in connection to a new permit for fill, dredging, and changes in use. In the absence of a new project, the Commission may not impose new conditions on an existing marina.	None identified	Marinas: Waste Discharge, Waste Facilities; Boating Clean and Green Campaign	None Identified	None identified
Marinas & Rec. Boating-Measure 4.2-E- Boat Cleaning and Maintenance:					
For boats that are in the water, perform:	Section 66632(f) of the McAteer-Petris Act. The Commission has authority to require conditions in connection to a new permit for fill, dredging, and changes in use. In the absence of a new project, the Commission may not impose new conditions on an existing marina.	None identified	None identified	None identified	Not currently addressed by RWQCB but SWRCB/Coastal Commission five-year plan stipulates that the two agencies will develop and establish programs to implement BMPs for underwater hull cleaning and maintenance in 50% of the marinas in San Francisco Bay, and increase the availability and promote the use of financially feasible, environmentally friendly hull paints and cleaning materials. Coastal Commisson will develop a clearinghouse of boat cleaning and maintenance information, and RWQCB will implement short-course hull cleaning training and certification programs and policies.
(1) topside cleaning and maintenance operations to minimize, to the extent practicable, the release to surface waters of (a) harmful products such as cleaners and solvents and (b) paint;	See Above	None identified	Partially accomplished through Boating Clean and Green Campaign	None identified	See above

TABLE 7: Application of Current Polluted Runoff Strategies to Identified Management Measures (continued)

Management Measure	BCDC Authority: McAteer-Petris Act, Suisun Marsh Preservation Act	BCDC Authority: San Francisco Bay Plan	Permit Conditions and Planning Programs	Local Programs and Policies	Regional Board (RWQCB) and State Board (SWRCB) Efforts
Marinas & Rec. Boating-Measure 4.2-E- Boat Cleaning and Maintenance:					
(2) underwater hull cleaning and maintenance operations to minimize, to the extent practicable, the release of paint and anodes.	See Above	None identified	Partially accomplished through Boating Clean and Green Campaign	None identified	See above
Marinas & Rec. Boating-Measure 4.2-F- Maintenance of Sewage Facilities:					
Ensure that sewage pumpout facilities are maintained in operational condition and encourage their use.	The Commission has the authority to enforce the sewage pumpout requirements contained in previous permits. However, it does not have the authority to require maintenance of sewage facilities not related to permit conditions.	Recreation Policies #4 (b), (c)	Marinas: Waste Facilities, Live-Aboard Boats, Enforcement Responsibility	None identified	Not currently addressed by RWQCB. SWRCB/Coastal Commission five-year plan stipulates that RWQCB will establish standards for the minimum number of sewage facilities per recreational vessels, and provide for the installation and maintenance of an adequate number of sewage facilities in the region. RWQCB, in conjunction with the San Francisco Estuary Project, will also assess the effectiveness and enforcement of current vessel sewage waste programs in the region. RWQCB is charged with establishing agreements for the inspection of pumpout facilities, and establishing clear lines of authority for enforcement of violations.

TABLE 7: Application of Current Polluted Runoff Strategies to Identified Management Measures (continued)

Management Measure	BCDC Authority: McAteer-Petris Act, Suisun Marsh Preservation Act	BCDC Authority: San Francisco Bay Plan	Permit Conditions and Planning Programs	Local Programs and Policies	Regional Board (RWQCB) and State Board (SWRCB) Efforts
Hydromodification-Measure 5.1-A-Physical and chemical characteristics of surface waters:					
(1) Evaluate the potential effects of proposed channelization and channel modification on the physical and chemical characteristics of surface waters;	Section 66632(f) of the McAteer-Petris Act; Section 29506 of the Suisun Marsh Preservation Act. The vast majority of hydromodification projects would likely not come under the Commission's purview because they would not be within the physical boundaries of the Commission's jurisdiction.	The Bay Plan does not specifically address the effects of proposed channelization, but the Richardson Bay Special Area Plan does address channelization; the need for evaluation is also discussed in Water Surface Area and Volume Policy #2 in the Bay Plan.	Partially accomplished through permit application review	*North Bay:* riparian-related, watercourse protection, or stream protection ordinances; watercourse protection techniques such as riparian zoning, general plan provisions, and riparian mitigation requirements[3]	RWQCB requires permits for all hydromodification projects and is currently working on a set of stream protection policies that will minimize impacts and maximize protection of natural resources. SWRCB/Coastal Commisson five-year polluted runoff plan specifies that SWRCB will develop a technical assistance manual to help applicants avoid impacts to wetlands and riparian areas by 2002. SWRCB will adopt general Waste Discharge Requirements that prescribe channel maintenance activities with minimal threat to water quality.
(2) Plan and design channelization and channel modification to reduce undesirable impacts;	Section 66632(f) of the McAteer-Petris Act; Section 29506 of the Suisun Marsh Preservation Act.	None identified	Partially accomplished through permit application review	See Above	See above
(3) Develop an O&M program for existing modified channels that includes identification and implementation of opportunities to improve physical and chemical characteristics of surface waters in those channels.	The Commission does not have authority to develop O & M programs for existing modified channels unless in association with a new or prior permit condition for fill, dredging, or change in use.	None identified	None identified	None identified	RWQCB plans to issue Waste Discharge Requirements (WDRs) for "minimal threat" channel maintenance activities and also plans to issue WDRs to Santa Clara County Flood Control District for flood control maintenance, both within 2002.

TABLE 7: Application of Current Polluted Runoff Strategies to Identified Management Measures (continued)

Management Measure	BCDC Authority: McAteer-Petris Act, Suisun Marsh Preservation Act	BCDC Authority: San Francisco Bay Plan	Permit Conditions and Planning Programs	Local Programs and Policies	Regional Board (RWQCB) and State Board (SWRCB) Efforts
Hydromodification-Measure 5.1-B-Instream and Riparian Habitat Restoration:					
(1) Evaluate the potential effects of proposed channelization and channel modification on instream and riparian habitat;	Section 66632(f) of the McAteer-Petris Act; Section 29506 of the Suisun Marsh Preservation Act. Many hydro-modification or riparian restoration projects would not come within the physical boundaries of the Commission's jurisdiction.	The Bay Plan does not address the effects of proposed channelization directly, but it does provide policies to protect sensitive ecosystems (see Fish and Wildlife Policies #1 and #2, Marshes and Mudflats Policy #3, Water Quality Policy #1)	Partially accomplished through permit application review; background report on riparian habitat protection and suggested protection and restoration techniques	*North Bay:* riparian-related, watercourse protection, or stream protection ordinances; watercourse protection techniques such as riparian zoning, general plan provisions, and riparian mitigation requirements	RWQCB requires permits for all hydromodification projects and is currently working on a set of stream protection policies that will minimize impacts and maximize protection of natural resources. SWRCB/Coastal Commission five-year polluted runoff plan specifies that SWRCB will develop a technical assistance manual to help applicants avoid impacts to wetlands and riparian areas by 2002. SWRCB will adopt general Waste Discharge Requirements that prescribe channel maintenance activities with minimal threat to water quality.
(2) Plan and design channelization and channel modification to reduce undesirable impacts;	Section 66632(f) of the McAteer-Petris Act; Section 29506 of the Suisun Marsh Preservation Act.	None identified	Partially accomplished through permit application review	See above	See above
(3) Develop an O&M program with specific timetables for existing modified channels that includes identification of opportunities to restore instream and riparian habitat in those channels.	The Commission does not have authority to develop O & M programs for existing modified channels unless in association with a new or prior permit condition for fill, dredging, or change in use.	None identified	None identified	None identified	RWQCB does not currently address O & M for existing channels.

TABLE 7: Application of Current Polluted Runoff Strategies to Identified Management Measures (continued)

Management Measure	BCDC Authority: McAteer-Petris Act, Suisun Marsh Preservation Act	BCDC Authority: San Francisco Bay Plan	Permit Conditions and Planning Programs	Local Programs and Policies	Regional Board (RWQCB) and State Board (SWRCB) Efforts
Hydromodification-Measure 5.3-A-Eroding Streambanks and Shorelines:					
(1) Where streambank or shoreline erosion is a nonpoint source pollution problem, streambanks/shorelines should be stabilized; vegetative stabilization methods preferred over structural stabilization methods;	The Commission does not have authority to require stabilization for streambanks or shorelines unless it is in connection with new fill, dredging, or changes in use.	Shoreline Protection Policies #1 - #4. Policies express preferences for vegetative methods of stabilization; Water Quality Policy #3.	Shoreline Protection: riprap material, riprap placement, riprap plans, maintenance; Sea Level Rise: Predictions and Implications for San Francisco Bay planning report	*North Bay:* riparian-related, watercourse protection, or stream protection ordinances; watercourse protection techniques such as riparian zoning, general plan provisions, and riparian mitigation requirements	RWQCB requires permits for all hydromodification projects and is currently working on a set of stream protection policies that will minimize impacts and maximize protection of natural resources. SWRCB/Coastal Commission five-year polluted runoff plan specifies that SWRCB will develop a technical assistance manual to help applicants avoid impacts to wetlands and riparian areas by 2002. SWRCB will adopt general Waste Discharge Requirements that prescribe channel maintenance activities with minimal threat to water quality.
(2) Protect streambank and shoreline features with the potential to reduce NPS pollution;	The Commission does not have authority to protect riparian features unless it is in connection with new fill, dredging, or changes in use.	None identified	Partially accomplished through permit application review	See above	See above
(3) Protect streambanks and shorelines from erosion due to uses of either the shorelands or adjacent surface waters.	See above	Shoreline Protection Policies #1 - #4; Water Quality Policy #3.	Partially accomplished through permit application review	See above	See above

TABLE 7: Application of Current Polluted Runoff Strategies to Identified Management Measures (continued)

Management Measure	BCDC Authority: McAteer-Petris Act, Suisun Marsh Preservation Act	BCDC Authority: San Francisco Bay Plan	Permit Conditions and Planning Programs	Local Programs and Policies	Regional Board (RWQCB) and State Board (SWRCB) Efforts
Wetlands, Rip. Areas-Measure 6-A-Protection of Wetlands and Riparian Areas:					
Protect from adverse effects wetlands and riparian areas that serve to reduce NPS pollution; maintain this function while protecting the other existing functions of these wetlands and riparian areas as measured by characteristics such as vegetative species composition, diversity, and cover, hydrology and quality of surface water and ground water, geochemistry of the substrate, and fauna species composition, diversity, and abundance.	Section 66632(f) of the McAteer-Petris Act; Section 29506 of the Suisun Marsh Preservation Act. The Commission has authority to require conditions in connection to a new permit for fill, dredging, and changes in use. In the absence of a new project, the Commission may not impose new conditions on an existing project.	Fish and Wildlife Policies #1 and #2; Marshes and Mudflats Policy #3 (c); Water Quality Policy #1.	Soil Removal, Diked Wetlands Protection, Marsh Protection; Marsh Restoration: Best Management Practices; planning efforts such as revisions to Bay Plan's wetland policies, participation in San Francisco Bay Area Wetlands Ecosystem Goals Project, North Bay Wetlands and Agriculture Program	*City of San Jose:* Riparian Corridor policy study, draft Riparian Restoration Action Plan. *North Bay:* project review process, Storm Water Pollution Prevention Plans (SWPPPs), BMPs, design review guidelines and development standards, riparian protection ordinances, wetland protection ordinances, watershed-based plans.	RWQCB encourages and requires wetlands protection through 401 Water Quality Certification Program (of the Clean Water Act) and works to protect wetlands by participating in regional efforts such as the Habitat Goals Project. SWRCB/Coastal Commission five-year polluted runoff plan establishes an objective of developing a technical assistance manual that will help project proponents avoid wetlands and riparian areas and establishes an objective for the RWQCB to develop a regional wetlands plan that would implement habitat goals and monitoring protocols.
Wetlands, Rip. Areas-Measure 6-B-Restoration of Wetlands and Riparian Areas:					
Promote the restoration of the pre-existing functions in damaged and destroyed wetlands and riparian systems in areas where the systems will serve to reduce NPS pollution.	Section 66632(f) of the McAteer-Petris Act; Section 29506 of the Suisun Marsh Preservation Act. The Commission has authority to require conditions in connection to a new permit for fill, dredging, and changes in use. In the absence of a new project, the Commission may not impose new conditions on an existing project.	Marshes and Mudflats Policy #3 (c); Water Quality Policy #1.	Marsh Restoration: Plans, Best Management Practices, Soil and Water Information, Avoidance of Work at High Tides, Monitoring; planning efforts such as revisions to Bay Plan's wetland policies, participation in San Francisco Bay Area Wetlands Ecosystem Goals Project, North Bay Wetlands and Agriculture Program	*City of San Jose:* Riparian Corridor policy study, draft Riparian Restoration Action Plan, pilot riparian restoration project.	RWQCB encourages and requires wetlands protection through 401 Water Quality Certification Program (of the Clean Water Act) and works to protect wetlands by participating in regional efforts such as the Habitat Goals Project. SWRCB/Coastal Commission five-year polluted runoff plan establishes an objective of developing a technical assistance manual that will help project proponents avoid wetlands and riparian areas and establishes an objective for the RWQCB to develop a regional wetlands plan that would implement habitat goals and monitoring protocols.

TABLE 7: Application of Current Polluted Runoff Strategies to Identified Management Measures (continued)

Management Measure	BCDC Authority: McAteer-Petris Act, Suisun Marsh Preservation Act	BCDC Authority: San Francisco Bay Plan	Permit Conditions and Planning Programs	Local Programs and Policies	Regional Board (RWQCB) and State Board (SWRCB) Efforts
Wetlands, Rip. Areas-Measure 6-C-Vegetated Treatment Systems:					
Promote the use of engineered vegetated treatment systems such as constructed wetlands or vegetated filter strips where these systems will serve to reduce NPS pollution.	Section 66632(f) of the McAteer-Petris Act; Section 29506 of the Suisun Marsh Preservation Act.	Shoreline Protection Policy #4, but not expressly for the function of reducing NPS pollution	None identified but may be partially accomplished through permit application review; see above planning efforts	*City of San Jose:* incorporates stormwater controls including use of vegetated swales, inlet filters into project designs.	RWQCB policies favor vegetated treatment systems over traditional methods.
Wetlands, Rip. Areas-Measure 6-D-Education/Outreach:					
Implement educational programs to provide greater understanding of watersheds, to raise awareness and increase the use of applicable management measures and practices for wetlands and riparian areas, and to promote projects which retain or re-establish natural hydrologic functions.	The Commission has the authority to engage in regional educational efforts, but does not appear to have the authority to require educational efforts from its project applicants, since a nexus between the project's impacts and educational impacts is unlikely.	None identified	Not included as part of permit process; see above planning efforts	*ACCWP:* public information and participation: educational outreach, creek-oriented watershed activities; monitoring and special studies. *SCV URPPP:* public information and participation, watershed and education outreach strategy, local and regional advertising, community outreach, outreach material distribution, training, monitoring activities, special studies. *City of San Jose:* residential outreach and education, industrial/commercial discharger control program.	RWQCB conducts its outreach through the San Francisco Estuary Program and by participating in regional planning efforts such as the Habitat Goals Project.

[1] Section 66632(f) of the McAteer-Petris Act and Section 29506 of the Suisun Marsh Preservation Act generally give the Commission the authority to consider the underlying policies of the Acts, including those policies that address water quality.

[2] Staff may review a permit application and any appropriate environmental documentation and may analyze the project for consistency with the Commission's laws and policies. Staff may also consult with the applicant on the project's water quality impacts, and if they are significant, may encourage the applicant to modify the project.

[3] Draft Staff Report, Riparian Systems in the North Bay Planning Area, April 1999. Prepared by the SF BCDC for the North Bay Wetlands and Agriculture Protection Plan.

TABLE 8: MANAGEMENT MEASURE SUMMARY

	ADDRESSED BY					
Management Measure	BCDC Permit Conditions and/or Planning Efforts	Bay Plan Policies Specifically Addressing the Management Measure	Regional Board or SWRCB	Local Programs and Policies	Additional BCDC Effort Appropriate?	Comments
Urban Measures						Even though no additional effort appears to be appropriate for these urban measures, the first Work Program element under Task 1.1, Review the Bay Plan Water Quality Findings and Policies is to review and update as appropriate BCDC's special permit conditions for all management measures
3.2-A-Construction Site Erosion and Sediment Control	√	√	√	√	No	
3.4-A-New Onsite Disposal Systems (OSDSs)	√		√		No	
3.5-A-Planning, Siting, and Developing Roads and Highways	√	√	√	√	No	
3.5-B-Bridges	√		√		No	
3.5-C-Construction Projects (Roads, Highways and Bridges)	√	√	√		No	
Marina Measures						See Work Program under:Task 1.2, Review the Bay Plan Recreation Findings and Policies Pertaining to Marinas; Task 1.3, Review Bay Plan Shoreline Protection Findings and Policies; and Task 3.2, Coordinate with the Regional Board on Marina Management Measures
4.1-A-Water Quality Assessment	√	√	√		Yes	See Task 3.2
4.1-B-Marina Flushing	√	√			Yes	See Task 1.2d
4.1-C-Habitat Assessment	√	√			Yes	See Task 1.2d
4.1-D-Shoreline Stabilization	√	√			Yes	See Task 1.3a
4.1-E-Stormwater Runoff	√	√			Yes	See Task 1.2d
4.1-F-Fueling Station Design	√				Yes	See Task 1.2d
4.1-G-Sewage Facilities	√	√	√		Yes	See Task 3.2
4.1-H-Waste Management Facilities	√		√		No	
4.2-A-Solid Waste Control	√		√	√	No	
4.2-B-Fish Waste				√	Yes	See Task 1.2b
4.2-C-Liquid Material Control	√		√		No	
4.2-D- Petroleum Control	√				Yes	See Task 3.2
4.2-E- Boat Cleaning and Maintenance	√		√		Yes	See Task 3.2
4.2-F- Maintenance of Sewage Facilities	√	√	√		Yes	See Task 3.2 & Task 1.2c

TABLE 8: MANAGEMENT MEASURE SUMMARY

	ADDRESSED BY					
Management Measure	BCDC Permit Conditions and/or Planning Efforts	Bay Plan Policies Specifically Addressing the Management Measure	Regional Board or SWRCB	Local Programs and Policies	Additional BCDC Effort Appropriate?	Comments
Hydromodification Measures						Even though no additional effort appears to be appropriate for these hydromodification measures, the first Work Program element under Task 1.1, Review the Bay Plan Water Quality Findings and Policies is to review and update as appropriate BCDC's special permit conditions for all management measures
5.1-A-Physical and chemical characteristics of surface waters	√		√	√	No	
5.1-B-Instream and Riparian Habitat Restoration	√		√	√	No	
5.3-A-Eroding Streambanks and Shorelines	√	√	√	√	No	Task 1.3a could also address this measure
Wetlands and Riparian Measures						
6-A-Protection of Wetlands and Riparian Areas	√	√	√	√	No	
6-B-Restoration of Wetlands and Riparian Areas	√	√	√	√	No	
6-C-Vegetated Treatment Systems	√		√	√	Yes	See Task 1.3b
6-D-Education/Outreach	√		√	√	No	

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APPENDIX A

FUTURE AUTHORITY ANALYSIS

The following aspects of the Commission's polluted runoff authority should be examined further:

1. **AUTHORITY**
    a. State
        (1). McAteer-Petris Act
        (2) San Francisco Bay Plan
        (3) Suisun Marsh Preservation Act
        (4) Suisun Marsh Protection Plan
        (5) Suisun Marsh Local Protection Program
            different components
        (6) Commission regulations
        (7) California Environmental Quality Act
        (8) Porter Cologne Act
    b. Federal
        (1) Coastal Zone Management Act
            Section 307, Federal Consistency
        (2) Commission Coastal Zone Management Program
2. **JURISDICTION**
    a. McAteer-Petris Act
        (1) Areas
            (a) San Francisco Bay
            (b) shoreline band
            (c) salt pond
            (d) managed wetland
            (e) certain waterways

(2) Types of Activities That Require a Permit

(a) placement of fill

1. definition of “fill”

(b) excavation of material worth more than $20

(c) substantial change in use

b. Suisun Marsh Act

(1) Areas

(a) Primary Management Area

(b) Secondary Management Area

(2) Types of Activities

(a) marsh development; definition

c. Federal Coastal Zone Management Act

(1) coastal zone

(2) federal development project and federal activity

(3) nonfederal projects that require a federal permit or license

(4) nonfederal projects that are supported in whole or in part by federal financial assistance

3. **POLICIES**

a. San Francisco Bay Plan

(1) Water Quality

(2) Recreation

(3) Dredging

b. Suisun Marsh Preservation Act

c. Suisun Marsh Local Protection Program

4. **CONSTITUTIONAL LIMITATIONS ON PERMIT CONDITIONS**

a. Fifth Amendment to U.S. Constitution prohibits taking of private property without just compensation

b. Important takings cases: *Nollan, Dolan*

APPENDIX B

DESCRIPTION OF PERMITS AND PROJECT TYPES REVIEWED

1. *Wetland Restoration* (BCDC Permits 2-00 and 12-99*)*: Dredging, grading, planting for wetland restoration project in certain waterway jurisdiction; grading and planting to develop a 26-acre wetland restoration project in the shoreline band;

2. *Water-Oriented-Use* (BCDC Permit No. 15-99):Moor and operate a 60,000-square-foot ship used to transfer and hold imported dry bulk cement in the Bay and construct, operate and maintain a pipe system for transporting bulk cement in the 100-foot shoreline band jurisdiction;

3. *Dredging* (BCDC Permit No. 7-99.02): Dredge and reuse of material for Berths 55-58 Project: (1) create two marine terminals, Berths 55-56 and 57-58; (2) one tug boat berth facility, Berth 59; (3) a containment dike at Middle Harbor located through former FISCO Piers 4 and 5 to create new land for the Berths 55-56 container yard; (4) a car, truck, and truck trailer parking area, the Harbor Transportation Center (HTC), located behind Berth 59; (5) one new access road to the new terminals and to the new public access; (6) a realigned Seventh Street; and (7) a 37.4-acre Middle Harbor Shoreline Park (MHS Park) in the Bay and 100-foot shoreline band;

4. *Utilities* (BCDC Permit No. 7-00*)*: Relocating two sewer lines in White Slough area (certain waterways jurisdiction);

5. *Transportation and Public Access* (BCDC Permit No. 16-99): Constructing highway lanes, shoulders, bicycle and pedestrian paths in salt pond jurisdiction;

6. *Bridge* (BCDC Permit No. 20-98)-Bike / pedestrian overcrossing: donate a 4.77-acre site on the south side of Highway 92, that will allow for a connection of the Bay Trail to the proposed bicycle / pedestrian overcrossing; contribute at least $50,000 to the Department of Fish and Game for use in implementing its Baumberg Tract Enhancement Plan, including the restoration of the 4.77-acre site to tidal wetlands; contribute $100,000 to the Hayward Area Recreation and Park District (HARD) for use in implementing Hayward Area Shoreline Plan to restore marsh habitat and increase shoreline recreational use; secure adequate funding for constructing a 2 to 3-mile-long, paved, pedestrian / bicycle path through the Baumberg Tract and the Caltrans-donated 4.77-acre parcel to connect the proposed bike / pedestrian over

crossing with the Bay trail to the south; implement a bicycle shuttle program to transport bike riders; provide adequate funding for the construction of the previously-unfounded Bay Trail connections between the San Mateo-Hayward and Dumbarton Bridges in the East Bay;

7. *Single Family Residence* (BCDC Permit No.M00-23): Additions/improvements to single family residence in the Bay and 100-foot shoreline band jurisdiction;

8. *Public Access, Recreation, Shoreline Protection* (BCDC Permit No. 15-98.02): Construction, use, maintenance of rowing dock, sailboat dock, shoreline protection in the Bay and construction, use , and maintenance of boat house, boat handling area, parking, public access in 100-foot shoreline band jurisdiction;

9. *Marina, Shoreline Protection, Public Access, Marsh Restoration, Commercial* (BCDC Permit No. 20-91.07): Dredging, excavating material, placing and maintaining shoreline protection, fill for floating slips, walkways, gangways, docks, pump out facility, public access, landscaping promenade, mitigation in the Bay, and excavating material, placing and maintaining shoreline protection, public access, parking, landscaped plaza, promenade, building pad, culverts, commercial structures, commercial buildings, fuel trailer, residential subdivision, temporary pavilion, hotel, landscaping in the 100-foot shoreline band jurisdiction.

10. *Marina (BCDC Permit No.12-98*): Construct new boat docks and berths, moor houseboats and live-aboard boats, construct breakwater improvements, and install public access in the Bay and 100-foot shoreline band;

11. *Shoreline Protection (*BCDC Permit No. M99-57, M00-20): Construct an approximately 45-foot-long, 4-foot-high, rock retaining wall in the Bay and 100-foot shoreline band; place concrete riprap along a riverbank in a certain waterway; and

12. *Shoreline Band Work* (BCDC Permit No. NOI 00-19/RWP 13, 6-00): Develop a pilot planting program on the shoreline of Mission Creek; landscaping, pathways, public restroom in shoreline band.

APPENDIX C

EXAMPLES OF COMMISSION PERMIT CONDITIONS RELATED TO POLLUTED RUNOFF

Major permits, and other permits where the staff may be particularly concerned about the individual or cumulative water quality impacts of a project, often include some combination of the following types of requirements:

Sample Polluted Runoff/Water Quality Permit Conditions

Special conditions **directly** related to water quality.

1. **Water Quality**

   a. The discharge of any solid or liquid wastes into the Bay at the project site is not authorized herein; (DP)

   b. Employ measures to minimize runoff from the site adversely impacting Bay water quality. Such measures shall include: (BMPs)

      1. installing and maintaining silt fences;
      2. diverting concentrated runoff around equipment and storage areas;
      3. minimizing storage of construction materials on-site;
      4. storing materials in a manner that limits exposure to rain and controls storm-water runoff;
      5. using pallets for chemicals and bagged materials;
      6. covering dumpsters with plastic sheeting at the end of each work day and during storms;
      7. separating wastes and recycling or disposing of them properly;
      8. regularly inspecting vehicles and equipment for leaks and maintaining them to prevent fluid leaks; and
      9. using drip pans beneath equipment.

   c. Ensure that all runoff is in compliance with the non-point source water quality requirements of the Regional Water Quality Control Board, San Francisco Bay Region, pursuant to the federal Porter-Cologne Act, the Clean Water Act, and the Coastal Zone Management Act; (RR)

   d. Use of Silt Curtains-Prior to initiating any work within subtidal areas, install a silt curtain around all areas where work will occur in subtidal areas to minimize impacts to water quality. The silt curtain shall be removed promptly once work within it has been completed; (BMPs)

2. NonPoint Source Pollution Control

a. Implement all appropriate and necessary best management practices (BMPs) to minimize the discharge of nonpoint source pollutants to the Bay during and after construction. BMPs shall be consistent with applicable local, state and federal laws and any required NPDES permits and stormwater pollution prevention plans; (BMPs)

3. Dredging

a. Water Quality Certification-Prior to the commencement of any dredging episode authorized herein, obtain a water quality certification or waiver of water quality certification from the California Regional Water Quality Control Board, for that episode. Failure to obtain such certification or waiver of certification prior to the commencement of the dredging episode shall terminate the Commission's authorization for that dredging episode; (RR)

b. Barge Overflow Sampling and Testing-Results of any effluent water quality or other testing required by the San Francisco Bay Regional Water Quality Control Board shall be submitted in writing to the Commission's office at the same time that such testing is submitted to the Regional Board; (RR)

c. In-Bay Disposal-At least 45 days prior to the commencement of any disposal episode authorized herein, the permittee shall submit a written statement to the Executive Director that contains all of the following… (5) results of chemical and biological testing of material proposed for dredging and disposal; (RR)

4. Marinas

a. Waste Discharge-The discharge of any solid or liquid wastes, including bilge water, gray water, or sewage, into the Bay within the marina basin is prohibited; (DP)

b. Construction-Construction standards for marina berths and associated facilities shall be at least equal to those established by the State Department of Boating and Waterways. All construction activity shall be performed to minimize turbidity and to prevent debris from drifting and presenting a pollution or navigation hazard; (BMPs, PS)

c. Waste Facilities-Prior to the use of any berth authorized herein, install a suitable facility for receiving and disposing of bilge water and oily wastes, and a facility for pumping out vessel holding tanks and receiving wastes from portable toilets. Such facilities shall be constructed to all applicable codes and standards, shall be connected to onshore waste treatment facilities, and shall be maintained in a safe and sanitary manner; (BMPs, PS)

d. Marine Toilets-Make it a requirement of the use or occupancy of any berth that: (a) any vessel berthed, if equipped with a marine toilet, shall contain an adequate holding tank, incinerator recirculation device, or other equivalent device approved by applicable agencies to preclude discharge of wastes into the waters of the marina, or have the marine toilet rendered inoperable while any such vessel is moored in the marina; and (b) any violation of the waste

discharge requirements of this amended permit shall be cause for immediate cancellation of the right of such use or occupancy. Submit to the Commission a copy of the berthing agreement which shall set forth the requirements included in this condition; (BMPs, PS, RR)

e. Best Management Practices- Prior to berthing any vessels at the new marina berths or by, submit for approval by or on behalf of the Commission pursuant to Special Condition II-A, Best Management Practices (BMP) for day-to-day operation of the harbor, including both vessel and surrounding land-based operations. The BMPs shall include schedules for inspecting vessels, holding tanks, the gas dock, pump-out facilities, and the floating debris barrier, as well as schedules for berth cleaning, harbor water surface skimming, and collecting debris from the floating debris barrier. In addition, the BMPs shall address how water quality in the harbor will be monitored and efforts undertaken to inform the berth occupants of harbor rules and water quality protection measures and measures taken to assure compliance; (BMPs)

f. Monitoring-By May 1 of the year following completion and occupancy of the harbor facilities, and by May 1 of each subsequent year for a five-year period, submit to the Commission for its review a brief monitoring report summarizing the year's water quality data, the occurrence of any spills and cleanup activity, any conflicts with adjacent land uses, and any suggested modifications to the BMPs reflecting actual experience in the harbor; (RR)

g. Floating Debris Barrier-The westernmost float of the berths shall be fitted with a flexible skirt designed to collect floatable debris. The permittee shall maintain the debris barrier in working condition and collect debris on a schedule approved as part of the best management practices, disposing of the collected debris at an upland location where debris cannot be subsequently washed or blown into the Bay; (BMPs, PS)

h. Fuel Dock-The existing fuel dock shall be retrofitted with an impermeable surface in the fueling area with drainage passing through an oil/water separator prior to discharge in the City sewer system. In addition, a new, double-walled, fuel supply line shall be installed from the fuel tanks; (BMPs)

i. Live Aboards-Convenient and adequate parking, restrooms, showers, garbage disposal facilities and sewage pumpout stations shall be provided and maintained for use by occupants of the live-aboard boats. Adequate tidal circulation shall be maintained
in the marina; (PS)

j. Enforcement Responsibility-The permittee shall adequately enforce the requirements herein, and shall submit to the Commission the name, address, and telephone number of the person at the marina responsible for such enforcement. (RR)

5. **Marsh Protection**

a. Marsh Protection-The work authorized by this permit shall be performed in a manner that will prevent any significant adverse impact on any tidal marsh or other sensitive wetland resources. If any unforeseen adverse impacts occur to any such areas as a result of the activities authorized herein, the permittee

shall restore the area to its previous condition, including returning the disturbed area to its original elevation and soil composition and, if the area does not revegetate to its former condition within one year, the permittee shall seed all disturbed areas with appropriate marsh vegetation; (PS)

6. **Diked Wetlands Protection**

a. No work authorized herein on any structure of facility shall significantly alter water management, circulation or drainage patterns or otherwise adversely affect any salt pond, managed wetland, or other sensitive diked wetland resources; (PS)

7. **Marsh Restoration**

a. Prior to any use of the project, undertake grading, introduction of tidal action, planting of marsh plants and monitoring, all in accordance with a plan submitted to, reviewed by, and approved by or on behalf of the Commission; (PR)

b. Best Management Practices

(1) Employ best management practices, such as compaction, soil fences, jute matting, etc., to assure that material placed to create the flow control and cut-off berms will not erode into the Bay shortly after placement, and will remain in place long enough to promote sedimentation in the borrow ditch; (BMPs)

(2) Any material of a potentially harmful nature encountered during excavation shall be contained within berms and prevented from coming into contact with the Bay and adjoining marsh. Any material encountered during excavation which is capable of being windblown, such as fragments of styrofoam, shall be contained using tarpaulins, visquene, etc. An engineer skilled with hazardous materials handling and remediation shall conduct the excavation and be responsible for decisions regarding any clean up, remediation, spill prevention or disposal decisions; (BMPs, PS)

c. Soil and Water Information-Information shall also be provided on the water, including water analysis of salinity, pH, biochemical oxygen demand (BOD), dissolves oxygen (DO), and, if appropriate, heavy metals; (RR, PR)

d. Avoidance of Work at Extreme High Tides-Avoid excavating during periods of extreme high tide that would submerge all or portions of the construction area. These work restrictions apply from four hours prior to the first peak of a predicted high tide to five hours past the last of the tide peaks; (PS)

e. Alternative Mitigation-Submit a list of alternative mitigation sites to the Commission by July 1, 2000. Provide mitigation at an alternative site with a 3 to 1 ratio, as stipulated in the Regional Water Quality Control Board Waste Discharge Requirements for this project; (GA)

f. Monitoring-The permittee shall be responsible for monitoring the site for five years after the restoration project has been completed. Such monitoring shall include measuring the water quality, soil characteristics, plant survival and plant growth rates. Should adverse conditions be identified, the applicant shall take corrective action as specified by or on behalf of the Commission; (BMPs, PS)

8. **Emergency Release Response Plan and Lease Agreement**

a. Emergency Plan-Prior to the start of the transfer operations authorized, submit to the Commission proof that the Storm Water Management Plan, as amended with the Emergency Release Response Plan, has been reviewed and approved by the Regional Water Quality Control Board. Operate the facilities authorized in a manner consistent with the Storm Water Management Plan and the Emergency Release Response Plan throughout the term of the permit; (RR, PS)

b. Lease Agreement-Prior to the start of transfer operations, submit an executed copy of the lease agreement that incorporates the best management practices required under the Storm Water Management Plan. Use the approved best management practices in on-shore and on-ship transfer operations throughout the term of the permit; (RR, BMPs)

9. **Control of Invasive Species-Ballast Water**

a. Within one year of project commencement, develop an overall work program to be approved by or on behalf of the Commission for coordinating the various investigations into the ballast water issues, and ensure that the most essential elements of that work, listed below, are funded:

(1) Implementation of a regulation requiring ballast water exchange at sea by vessels calling at Port facilities that will be consistent with the U.S. Coast Guard voluntary rules and the International Maritime Organization guidelines;

(2) Support of adoption of the International Maritime Organization's (MARPOL) regulations, that will make mandatory the use of existing voluntary guidelines to minimize in-port discharge of ballast water;

(3) Support the adoption of national mandatory ballast water management regulations to reduce the risk of invasive species introduction on a national level through support and comment letters;

(4) Support educational outreach program sponsored by the National Sea Grant College Program to inform vessel operators calling at the Port through participation in a task force, newsletter contributions, and review of documents. Educational outreach shall include, but is not limited to: (a) suggested measures to reduce uptake of ballast water containing invasive species, including the identification of "biological hotspots", that is waters with high populations of potentially invasive species; (b) the risks of

invasive species to be discharged with ballast water; (c) existing national voluntary guidelines aimed at maximizing risk (National Invasive Species Act of 1996); and (d) training, information regarding measures to control introduction of invasive species from the anchor system;

(5) Support of an on-shore treatment task force by provision of in-kind services to review documents (to date, this task force has not been funded); and

(6) Cooperation with the Regional Water Quality Control Board in sponsoring a workshop to determine how to develop a comprehensive strategy for the ballast water component of the invasive species issue in the Bay; (BMPs, PS)

10. **Creosote Treated Wood**

a. No pilings or other wood structures that have been pressure treated with creosote shall be used in any area subject to tidal action in the Bay or any certain waterway, in any salt pond, or in any managed wetland within the Commission's jurisdiction as part of the project authorized; (PS)

11. **Sealing Abandoned Pipelines**

a. The existing pipeline to be abandoned in place shall be capped on both ends and shall be filled with an inert material such as cement or clay slurry; (BMPs)

Special conditions **indirectly** related to water quality .

1. **Shoreline Protection**

a. Riprap Plans-No work whatsoever shall be commenced on the shoreline protection improvements authorized herein until final riprap plans have been submitted to, reviewed, and approved in writing by or on behalf of the Commission; (PR)

b. Riprap Material-Riprap material shall be either quarry rock or specially cast or carefully selected concrete pieces free of reinforcing steel and other extraneous material and conforming to quality requirements for specific gravity, absorption, and durability specified by the California Department of Transportation or the U. S. Army Corps of Engineers. The material shall be generally spheroid-shaped. The overall thickness of the slope protection shall be no more than three feet measured perpendicular to the slope. Use of dirt, small concrete rubble, concrete pieces with exposed rebar, large and odd shaped pieces of concrete, and asphalt concrete as riprap is prohibited; (BMPs)

c. Riprap Placement-Riprap material shall be placed so that a permanent shoreline with a minimum amount of fill is established by means of an engineered slope not steeper than two (horizontal) to one (vertical). The slope shall be created by the placement of a filter layer protected by riprap material of sufficient size to withstand wind and wave generated forces at the site; (BMPs, PS)

d. Riprap-Maintenance-The shoreline protection improvements authorized shall be regularly maintained by, and at the expense of the permittee, any assignee, lessee, sublessee, or other successor in interest to the project. Maintenance shall include, but not be limited to, collecting any riprap materials that become dislodged and repositioning them in appropriate locations within the riprap covered areas, replacing in-kind riprap material that is lost, repairing the required filter fabric as needed, and removing debris that collects on top of the riprap. Within 30 days after notification by the staff of the Commission, the permittee or any successor or assignee shall correct any maintenance deficiency noted by the staff; (PS)

2. **Construction Operations**

All construction operations shall be performed to prevent construction materials from falling into the Bay. In the event that such material escapes or is placed in an area subject to tidal action of the Bay, the permittee shall immediately retrieve and remove such material at its expense; (PS).

3. **Debris Removal**

a. Removal of Excavated Material-All excavated material must be removed from the project site for proper disposal outside the Commission's jurisdiction or used to fill the existing drainage ditch to the elevation of the surrounding area. Excavated soils may be temporarily stored at other locations within the Commission's jurisdiction, provided measures are employed to assure that material does not wash or erode into the surrounding marsh or waterways. No excavated material shall be permanently stored at any such temporary sites; (PS).

b. All construction debris shall be removed to a location outside the jurisdiction of the Commission. In the event that any such material is placed in any area within the Commission's jurisdiction, the permittee, its assigns, or successors in interest, or the owner of the improvements, shall remove such material, at its expense, within ten days after it has been notified by the Executive Director of such placement; (PS)

4. **Soil Removal**

The top 8 inches of topsoil and vegetation shall be stockpiled during trenching activities and replaced upon project completion at preconstruction grade to encourage growth of native vegetation. The remaining soil materials removed shall not be stored on site, but shall be properly disposed of at a location outside the Commission's jurisdiction; (BMPs)

Standard Conditions include:

1. **Required Permissions**

All required permissions from governmental bodies must be obtained before the commencement of work; these bodies include, but are not limited to, the U. S. Army Corps of Engineers, the State Lands Commission, the Regional Water Quality Control Board, and the city and / or county in which the work is to be

performed, whenever any of these may be required. This permit does not relieve the permittee of any obligations imposed by State or Federal law, either statutory or otherwise required permissions from governmental bodies including the Regional Board; (GA)

2. **Performance**

Work must be performed in a manner so as to minimize muddying of waters, and if diking is involved, dikes shall be waterproof. If any seepage returns to the Bay, the permittee will be subject to the regulations of the Regional Water Quality Control Board in that region. (BMPs, PS)

APPENDIX D

EXAMPLES OF BAY PLAN POLICIES THAT ADDRESS POLLUTED RUNOFF

In addition to the applicable Bay Plan's policies identified in Chapter 3, the following policies may also directly or indirectly address polluted runoff (see Table 7):

1. Fish and Wildlife Policies #1 and #2 state that marshes and mudflats around the Bay should be maintained to the greatest extent feasible. These policies also state that specific habitats needed to prevent extinction of any species, or to maintain or increase any species with substantial public benefits, should be protected.
2. Water Quality Policy #1 stipulates that to the greatest extent feasible, marshes and mudflats should be maintained, and whenever possible, increased. Water Quality Policy #3 states that shoreline projects should be designed and constructed in a manner that reduces soil erosion and protects the Bay from increased sedimentation through the use of appropriate erosion control practices.
3. Water Surface Area and Volume Policy #2 states that water circulation in the Bay should be maintained, and improved as much as possible. Any proposed fills, dikes, or piers should be thoroughly evaluated to determine their effects upon water circulation and then modified as necessary to improve circulation or at least to minimize any harmful effects.
4. Marshes and Mudflats Policy #3 (c) states that the quality of existing marshes should be improved by appropriate measures whenever possible.
5. Shoreline Protection Policies #1 through #4 address and authorize shoreline erosion. These policies express preferences for vegetative methods of stabilization. Policy #1, for example, states that new shoreline erosion control projects and the maintenance or reconstruction of existing erosion control facilities should be authorized if: (a) the project is necessary to protect the shoreline from erosion; (b) the type of the protective structure is appropriate for the project site and the erosion conditions at the site; and (c) the project is properly designed and constructed. Policy #2 specifies that riprap revetments, the most common shoreline protective structure, should be constructed of properly sized and placed material that meet sound engineering criteria. Policy #3 states that authorized protective projects should be regularly maintained according to a long-term maintenance program to assure that the shoreline will be protected from tidal erosion and that the effects of the erosion control project on natural resources during the life of the project will be the minimum necessary. Policy #4 states that shoreline protective projects should include provisions for non-structural methods such as marsh vegetation where feasible. Along shorelines that support marsh vegetation or where marsh establishment has a reasonable chance of success, the Commission should require that the design of authorized protective projects include provisions for establishing marsh and transitional upland vegetation as part of the protective structure, wherever practicable.
6. Transportation Policy #2 specifies that the Commission should "encourage alternative methods of transportation to be used…that do not require fill." Moreover, finding "e" of the Transportation section brands roads as a non water-oriented thus, thus making it illegal to fill the Bay for roads.

7. Recreation Policy #2 stipulates that the Commission should only allow additional marinas provided they would not have significant adverse effects on water quality and circulation, would not result in inadequate flushing, would not destroy valuable marshes and mudflats, and would not harm identified valuable fish and wildlife resources. Recreation Policy #4 (b) specifies that no new or expanding marina should be approved unless an adequate number of vessel sewage pumpout facilities are available. It also specifies the provision of restrooms available and that pumpout facilities should be maintained. Recreation Policy #4 (c) specifies the criteria for allowing live-aboard boats such as: the marina would provide, on land sufficient and conveniently located restrooms, showers, and garbage disposal facilities; the marina would provide and maintain an adequate number of vessel sewage pumpout facilities in locations that are convenient in location and time of operation to all boats in the marina, particularly live-aboard boats; there would be adequate tidal circulation in the marina to mix, dilute, and carry away any possible wastewater discharge.